Influences of customary and statutory governance on sustainable use and livelihoods: The case of baobab, Chimanimani District, Zimbabwe




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DECLARATION

I, Witness Kozanayi, declare that

Influences of customary and statutory governance on sustainable use and livelihoods: the case of baobab, Chimanimani District, Zimbabwe.

is my own work, that it has not been submitted or is being submitted concurrently for any degree or diploma in any other university and that to the best of my knowledge, all sources I have used or quoted have clearly be referenced.

Signed: Signed by candidate

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Co-supervisor: Associate Professor Frank Matose (University of Cape Town, South Africa)

ABSTRACT

Scholars have engaged actively with the link between customary practices and ecological conservation in Africa as part of a broader debate on governance approaches for natural resource management. To a large extent, this is in response to a growing voice articulating the need to integrate traditional institutions and customary practices into a more contemporary form of governance for Africa's democratic and socio-economic transformation. To date, however, the integration of customary and statutory approaches to governance has yielded only modest progress in the forest sector and knowledge remains limited about the interface between these governance systems and the effect of this dualism on natural resource management. Using the lens of the baobab tree, this research set out to address these gaps and to elucidate understanding of the interplay between customary and statutory governance in managing natural resources; the influence of such interactions on ecological sustainability and livelihoods; and the contextual factors that shape such approaches. Uses of the baobab tree as well as factors affecting access were analysed.

Two study sites were selected on the basis of similarities in resource endowment and contrasting use patterns and forms of governance. Both quantitative and qualitative methods were used. Quantitative methods included an ecological survey to examine the relationship between different indicators of ecological sustainability and different tenure regimes. A household survey was also carried out to examine the extent to which households use and benefit from baobab products. Qualitative methods included focus group discussions, institutional mapping, ranking and scoring, and oral histories. The study engaged with debates around governance, *bricolage*, non-timber forest products, bifurcation, livelihoods and access.

Findings show that the baobab tree is used in multiple ways by households, and has both consumptive values as well as intrinsic values which are typically overlooked in the discourse of natural resource governance. The study illustrates that the interest of traditional institutions in regulating baobab use and access has been informed by reasons relating to sustainable livelihoods, ecological sustainability and the need to maintain a delicate link between environmental sustainability, the spirits of the land and resource users. Local arrangements are robust, dynamic and are entrenched in the day to day lives of the resource

users. These arrangements may not fit into existing technical toolkits or environmental blueprints, and policy from the top may not be connecting with reality on the ground. Although traditional authorities and customary practices have remained relevant for local people in the realm of resource governance, they are weakening in the face of commercial baobab use. Where statutory forms of governance are overlaid onto existing customary forms of governance without due regard for local practices, unintended consequences arise. A key finding is that history profoundly informs the way local people harvest and use resources due to the long trajectory of the interplay between customary and statutory forms of governance that spans back to the colonial era.

The main conclusion from the study is that both customary and statutory systems of governance are important, but need to be used in a graduated manner. Statutory forms of governance can be introduced to assist customary practices on a demand-driven basis. Results emphasise the importance of considering seemingly peripheral forms of governance such as customary practices within the continuum of resource governance in rural areas.

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I dedicate this thesis to my mother, **Hazvirovi** (it will not come to pass), Kozanayi (*nee* Tonha) who cherishes education so much yet she never had the opportunity to enter the door of a classroom as a pupil because of circumstances beyond her own control.

ACRONYMS

AGRITEX	Agricultural Technical and Extension Services
CAMPFIRE	Communal Areas Management for Indigenous Resources
CBD	Convention of Biodiversity
CIFOR	Centre for International Forestry Research
CLA	Communal Lands Act
CLFPA	Communal lands Forestry Produce Act
CRDC	Chimanimani Rural District Council
CSO	Central Statistical Office
DNA	Department of Native Affairs
EMA	Environmental Management Act/ Agency
FA	Forestry Act
FAO	Food and Agriculture Organisation
FC	Forestry Commission
GRAS	Generally Regarded as Safe
ICUC	International Centre for Underutilised Crops
IIED	International Institute for the Environment and Development
MDC	Movement for Democratic Change
NHA	Native Land Husbandry Act
NGO(s)	Non-Governmental Organisation(s)
NTFP(s)	Non- Timber Forest Product(s)
NRB	Natural Resources Board
ODI	Overseas Development Institute
PRA	Participatory Rural Appraisal
RDC	Rural District Council
SADC	Southern Africa Development Community
SAFIRE	Southern Alliance For Indigenous Resources
TA(s)	Traditional Authority(ies)
TLA	Traditional leaders Act

VIDCO	Village Development Committee
WADCO	Ward Development Committee
WEMEC	Ward Environmental Management Committee
WHO	World Health Organisation
WRi	World Resources Institute
ZANU (PF)	Zimbabwe African National Union (Patriotic Front)

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CHAPTER 1. INTRODUCTION

Customary practices and rules have prevailed over the governance of forest resources in communal areas for many generations.[1] Customary practices have also been influential as the *de facto* form of governance for perceived "low value" natural resources that the state cannot reach due to budgetary constraints (Ribot & Oyono, 2005; Pollard & Cousins, 2007; Mutimukuru *et al*., 2008; Cerutti *et al.,* 2012). Yet, customary practices have not typically been considered as a central component of governance despite the fact that natural resources in Africa are typically found in common property regimes where access is ordinarily regulated using customary rules (Food and Agriculture Organisation (FAO), 2008; Economic Commission for Africa (ECA), 2007). For the purposes of this study, customary practices and rules will be used to refer to the suite of traditional practices and traditional institutions used to govern natural resources.

Emergent markets for forest products, in particular non-timber forest products (NTFPs), driven in part by consumer desires in Northern countries for "natural" products, are increasingly arousing interest in governments (Schumann *et al*., 2010).[2] NTFPs include all biological materials other than timber, extracted from natural forests or savannahs for human use. These include parts of individual plants such as leaves, bark, fruits, and latexes, or parts of the populations' life cycle, such as seeds, flowers, caterpillars and eggs (Mudavanhu, 1998; Belcher, 2003).[3]

The state's involvement in the governance of NTFPs is typically motivated by concerns about ecological degradation. In some cases, the state may also be motivated by concerns about the impacts of commercialization on vulnerable groups whose livelihoods heavily depend on

[1] By way of definition, customary practices mean a code of conduct approved by tribal tradition, the hereditary body of established conduct that has been observed, recognized and enjoyed through many generations, and handed down by the fore-fathers (Katerere & Zaag, 2003). Customary rules often go hand in glove with customary practices, describing the substantive and procedural rights, decision-making processes, norms and taboos and institutional arrangements that apply to a defined group of people (Katerere, 2001).

[2] NTFP are plant or animal products that exclude wood harvested from natural or managed plant forests (Neumann & Hirsch, 2000).

[3] Cultivation of NTFPs on a commercial basis is emerging (Ros-Tonen & Kusters, 2011). This study will only focus on the wild NTFPs which are the main form of NTFPs found across Zimbabwe and much of Africa.

natural resources (Vantomme & Walter, 2002; United Nations Development Program (UNDP), 2005; Shackleton *et al*., 2015). The state may also see the commercialization of NTFPs as an opportunity to raise revenue through levies, taxes and permits (Schumann *et al*., 2010).

The ecological impact of commercially harvesting NTFPs has received mixed views, largely due to the varied nature of the plant part that is used, and the form of governance in place (Wynberg & van Niekerk 2014). In its infancy, NTFP commercialization was promoted on the basis of its perceived benign negative impacts on the environment (Mudavanhu, 1998; Neumann & Hirsch, 2000; Belcher *et al.,* 2005; Belcher & Schreckenberg, 2007). More recently, the view has become increasingly pessimistic. For example, Brown and Lassoie (2010) argue that customary forms of governance get strained due to commercialization and this results in overexploitation of the resource, ultimately compromising the livelihoods of vulnerable groups. At the same time, there is evidence that disputes this assertion, arguing that with proper governance systems in place, commercialization can be ecologically sustainable (Ticktin, 2015; Wynberg & van Niekerk, 2015).

The commercialization of NTFPS and the subsequent involvement of the state in its governance, raises important questions about how customary and statutory systems operate next to each other and with what outcomes. A common tendency has been for statutory systems to be super-imposed onto existing customary practices, in the process creating multiple centres of authority with different outcomes (Mukamuri, 1995a; Mamdani, 1996; Wynberg & Laird, 2007). In a study of the governance of natural resources in developing countries, FAO (2008) identifies ecological sustainability and equitable access to be an outcome of contests between customary and statutory forms of governance. Within the natural resources sector there has been little research done on this issue (notable exceptions being Sola, 2004; Wynberg & Laird, 2007; and Wynberg *et al.,* 2015) with scholars mainly focusing on administrative governance (George & Binza, 2011; Baldwin, 2015), and power struggles around land allocation (Nemarundwe, 2003). A theoretical blind spot has emerged in terms of the ecological and livelihood outcomes of using customary practices to govern natural resources. What is clear is that the interrogation of customary-statutory forms of governance should go beyond the generalities of institutional analysis and critically look at

the economic and ecological outcomes that emerge with the intertwining of these two systems.

1.1 The re-emergence of traditional authorities as guardians of customary practices

At the centre of the discourse on customary practices has been the role of traditional authorities (TAs), particularly chiefs who are responsible for local governance and are the highest office overseeing customary practices (Dore, 2001; Makumbe, 2010). In the recent past, chiefs have reasserted their authority in the governance arena (Nuesiri, 2014; Baldwin, 2011b & 2015). After reviewing the role of TAs in Africa, Nuesiri (2014) concluded that the authorities are on the ascendance. He concluded thus, "It is clear that chiefs' power is re-emerging all across Africa and the principal reason for this is the transition to democracy…" (Nuesiri, 2014: 52). To that effect, several countries in southern Africa are realigning their constitutions in order to recognise the role and function of TAs in governance structures (ECA, 2007). Indeed, much of today's forest tenure combines elements of traditional forest management with government controlled conservation (FAO, 2008).

The task of using both forms of governance is complex. Argues Nuesiri (2014: 48): "Establishing democratic local government as the singular public decision-maker at the local level, where traditional authority is just one among a number of civic actors holding local government to account, is a formidable challenge". While customary practices have great potential to result in livelihood improvement and ecological conservation (International Institute for Environment and Development (IIED), 2009; Bennet & Dearden, 2014) governments have a legal mandate to manage forests in their jurisdiction and to ensure their sustainable use (Mandondo, 2001). This interface has been poorly explored. Key questions that arise from the use of both customary and statutory forms of governance in natural resource management include the dynamics that emerge when the two forms of governance interplay, and how the use of both customary and statutory forms of governance impact on the ecology of the resources and livelihoods.

1.1.1 Baobab as a case study

This study uses the baobab tree as the lens through which these questions will be analysed. The baobab tree is important because it has a myriad of uses and its fruits are being

popularized as a super fruit in Europe (Gruenwald, 2009) while locally, harvesters derive over 300 consumptive and non-consumptive uses from the tree (Sanchez, 2010). The market for baobab products in sub Saharan Africa has been estimated to be over US$1billion per year, benefiting over one million harvesters, and is projected to increase (Bennet, 2006; Sanchez, 2010). Historically, customary systems have been used to manage the tree, but increased commercialization led to greater state engagement, and the resource is now managed by both customary and statutory systems.

1.2 Aim of the research

Using the lens of baobab commercialization, the research aims to elucidate understanding of the interplay between customary and statutory governance in managing natural resources, the influence of such interactions on ecological sustainability and livelihoods, and the contextual factors that shape such systems.

Specific objectives supporting the research aim are:

i. To identify baobab products harvested and their contribution to livelihoods;
ii. To determine linkages between different governance systems and the sustainable use of baobab, with a focus on different tenure regimes;
iii. To elucidate historical and contemporary forms of statutory and customary governance regulating baobab use; and
iv. To propose a framework to understand how customary and statutory forms of governance influence ecological sustainability and livelihoods.

1.3 Significance of the study and justification

This study demonstrates the role of local and national level factors shaping natural resources governance practices and livelihood and ecological outcomes. It thus seeks to provide a better understanding of the multiple forms of governance that are used concurrently to regulate access to natural resources. Broadly, this research contributes to issues vexing African governance about the role of TAs and the role customary practices can play. It also contributes to debates about how customary practices form part of the overarching pluralistic governance framework (McAuslan, 2005).

At the local level, the study demonstrates how local communities and their livelihoods are embedded within customary practices. By focusing at the local level, the study contributes empirical data to a debate that has typically been framed at a very theoretical and abstracted level. Moreover, it also provides a view from the village level, rather than from the chieftaincy. This is pertinent because "it is at the local government level that the conflict between tradition and modernity is more pronounced" (Egwurube, 1988 in Nuesiri, 2014:44). Most studies investigating the traditional authority-state interface have been focused at the chieftaincy level (Weinrich, 1971; Mamdani, 1996; Makumbe 2010; Boone, 2003; Nuesiri, 2014; Baldwin, 2015). Yet chiefs are mainly responsible for administrative governance.

At policy level, the study contributes to debates on what role governance can play in enhancing livelihoods through commercialization without compromising ecological sustainability of the resource. Many rural economies are dependent on the harvesting and trading of natural products (Wiersum *et al*., 2014), underpinning the importance of understanding the contribution of these activities towards ecological degradation.

Insights from this study also contribute to the body of knowledge being generated on the increasingly commercialised baobab tree. With the exception of an exploratory study by Mukamuri and Kozanayi (1999) on the institutional arrangements surrounding baobab bark use in Zimbabwe, understanding of the impact of forms of governance on local livelihoods and the ecology of the tree remains limited. Without such knowledge, resource degradation can take place unabated, while inequitable resource sharing can result in powerless community members being denied access to baobab products.

1.4 The context of Non-Timber Forest Products

The study is located in southern Africa, which is predominately arid or semi- arid, with mostly infertile soils (Frost & Mandondo, 1999). While this limits agricultural potential, agriculture is still the main source of livelihood for the more than 200 million peasant farmers living in rural areas in the region (Mubaiwa, 2004; World Bank, 2007). Consequently, the majority of rural people harvest forest resources for subsistence and commercial purposes (Campbell, 1996; Cavendish, 2000; Campbell *et al,* 2001 & 2002b). Among the forest products harvested are Non-Timber Forest Products (NTFPs) (Campbell & Luckert, 2002).

Use of NTFPs is gaining momentum with the emergence of markets for natural products in the global West (Bennet, 1996; WHO, 2003). Drawing on the extensive work on NTFPs commercialization of Neumann and Hirsch (2000) and Brown and Lassoie (2010), there are four immediate outcomes that can be discerned, namely: 1) intervention by the state and subsequent usurpation of local management roles by the state; 2) better management of the resource base as actors are incentivised to manage a resource from which they draw benefits; 3) inequitable distribution of benefits as marginalised groups such as women and poor households lose out; and 4) degradation of the resource if existing rules, particularly customary practices, weaken.

Overall, there has been in rise in the commercial use of NTFPs, due in part to the emergence of a market for super foods in Europe.[4] Globally, to varying degrees, 1.6 billion people (25% of the global population) depend on forest products for survival (World Bank, 2014). Annually, trade in NTFPs generates $17 billion (Tewari, 2014). Commercialization has been promoted on the assumption that harvesting NTFPs has mild negative impacts on the environment and equally important, harvesting has been justified as NTFPs have been seen to play a key role in the development-conservation discourse (Peters, 1994).

The importance of governance in this context is clear, as witnessed by an emerging scholarship on NTFP governance (Bennett & Dearden, 2014). Wiersum *et al*. (2014) identify three main trends in the governance of NTFPS, namely: 1) increasing formalisation of customary practices; 2) emergence of new formal standards for production and trade; and 3) the increasing hybridisation of customary and statutory forms of governance. This characterisation resonates well with research emerging from across Africa regarding the use of and governance of natural resources where both the state and TAs are increasingly getting involved (FAO, *et al* 2013; Nuesiri 2014).

1.5 Theoretical debates

The concept of governance which underpins this study has received much scholarly attention (e.g. Stoker, 1998; Weiss, 2000; Katerere, 2002; Rival, 2003; Brinkerhoff, 2005; Bartley *et al.,*

[4] These are forest products that are not timber. In this case I am focussing on fibre and fruits. See Belcher (2003) for a comprehensive definition of NTFPs.

2008; Colfer & Feintrenie, 2011; Ngeta, 2014; Sowman & Wynberg, 2014) and its meaning is increasingly contested (Sowman & Wynberg, 2014). Governance has been described as adaptive, interactive or collaborative (Wiersum *et al.,* 2014), implying that it involves many actors to deal with the complexities on the ground. According to Brinkerhoff (2005:2), "governance concerns the rules, institutions, and processes that form the nexus of state-society relations where government and citizens interact" for the purposes of achieving greater efficiency in the production of public services. This definition, which acknowledges that governance is broader than the government, is the one used for purposes of this study.

Several frameworks have been proposed to understand governance (e.g. Stoker, 1998; Weiss, 2000; Rival, 2003; Brinkerhoff, 2005; Kooiman *et al* 2005*;* Kooiman *et al*., 2008) but most are generalised and lack the specificity to capture complex interactions in the African context. Moreover, many are based on Northern contexts which are quite different from the African context. Understanding such a dynamic and adaptive phenomenon requires a theoretical approach that integrates elements of scale and dynamism. Additional interlinked concepts that are considered in this thesis include access, bricolage, bifurcation, and structuration. These are further discussed in Chapter 2, with a summary provided below.

1.5.1 Access to resources

Access to resources is a key parameter in governance and is complex in the African context where it stands between impoverishment and survival for rural people (Ribot, 1998; Nemarundwe & Kozanayi, 2003; Ribot & Peluso, 2003; Cleaver 2012). Broadly, access is about who gets or does not get what, in what ways, and when (Ostrom, 1990; Ribot & Peluso, 2003). To regulate access, statutory and customary practices may be used in isolation or overlaid on each other (Ostrom, 1990; Schlager & Ostrom, 1992; de Soto, 2000).

1.5.2 Structuration

To access natural resources, harvesters have to act in response to the institutions enforcing forms of governance. To be able to act, actors have agency, explained by Giddens's 1984 seminal work on structuration. Unlike functionalist theory that portrays structures of society/ institutions as having power to regulate and limit human behaviour (North, 1990; Ostrom,

1990), the structuration theory argues that the very harvesters whose behaviour institutions/structures try to regulate, are not powerless. They have agency which enables them to extricate themselves from unfavourable conditions and influence structure (Giddens, 1984). In sociology, human agency is celebrated as a liberating factor. The influence of institutions is not unidirectional as espoused by mainstream institutional economic theory (North, 1990). Resource harvesters have power to influence structure in what Giddens (1984: xxi) calls the "duality of structure". [5] "Structure (therefore), is the medium and outcome of the conduct it recursively organises; the structural properties of social systems do not exist outside of action but are chronically implicated in its production and reproduction", (Giddens 1984: 376).

1.5.3 Bricolage

Drawing on 'post-institutionalist' perspectives, and building on Giddens' structuration theory, Cleaver (2012) rejects over-formalised managerial approaches, preferring instead to embrace a variety of partial and contingent solutions that are more reflective of the ever-changing evolution of institutions. Actors (regulators and harvesters alike) are constantly interacting and reconfiguring themselves in ways that result in different desired outcomes, so much so that neat fit institutional design is elusive. *Bricolage* is a French word meaning making do with whatever is available (Cleaver, 2012).

Institutional bricolage is a process through which people, consciously and non-consciously, assemble or reshape institutional arrangements, drawing on whatever materials and resources are available, regardless of their original purpose. In this process, old arrangements are modified and new ones are invented. Institutional components from different origins are continuously reused, reworked, or refashioned to perform new functions. Adapted configurations of rules, practices, norms and relationships are attributed meaning and authority (Cleaver & de Koning, 2015: 4).

[5] See also Le Grand (2003) on the same, but looking at public administration in the United Kingdom. She argues that if people are unhappy with the form of governance or service delivery, they walk out rather than just be willing victims. Scott (1985) also gives a cocktail of actions so called weak people use to extricate themselves from oppressive situations. Other scholars have referred to this as "voting with their feet" (Nhira *et al.,* 1998).

1.5.4 Bifurcation

In addition to the above theories, Mamdani's seminal work on the "citizen and the subject" has informed the recent conceptualization and analytical framing of traditional authority in the governance of contemporary Africa (Mamdani, 1996). In the main, TAs have been viewed as despots that exist largely for the political expedience of the central state (Mamdani, 1996; Ntsebeza, 2003, 2005; Chakaipa, 2010; Govo *et al.,* 2015). Analysing the evolution of customary practices through the lens of political administration, Mamdani (1996) argues that repressive colonial regimes erroneously used customary practices to oppress the locals in the name of 'enforcing' tradition, when the strategy was to create a bifurcated state with two systems of governance for the colonialists (citizens) and the locals (subjects). Contesting this view, Boone (2003) and Baldwin (2011a & 2011b) demonstrate that during and after colonial periods, TAs were not completely subjugated by the central state. Nuesiri (2014) advances this discussion by arguing that TAs are on the ascendancy and that they are being more assertive in the governance of natural resources. It is these themes that the thesis engages with.

1.6 Methods and study site

To fully understand complex governance, ecological and livelihood issues, a combination of qualitative and quantitative methods were used. An ecological survey was undertaken to assess harvesting and productivity patterns of baobab trees under different tenure regimes. A household questionnaire survey (336 households) was carried out to capture the quantities of baobab products harvested by households, income levels and knowledge and perceptions of existing governance practices. Qualitative methods included a number of Participatory Rural Appraisal (PRA) approaches. A case study approach was used in the study.

The study was carried out in Chimanimani district, eastern Zimbabwe. Two study sites, Jinga village and Nyanyadzi were selected as the study areas. Nyanyadzi is made up of several villages under one chief. The two sites have striking similarities as well as differences (Figure 1). Both are similar in economic, biophysical and socio-historical terms (Chapters 4 and 5). Additionally, both areas share commonalities in that they use customary and statutory forms of governance, albeit to varying degrees. The major difference is in the use and governance

of the baobab tree. In Jinga, use is highly regulated using customary practices and is largely limited to domestic purposes. On the other hand, in Nyanyadzi there is high commercialization of baobab products, mainly fibre and fruits. Fibre harvesting dates to about the 17th century while commercial fruit selling started around 2004. Further, in Nyanyadzi statutory rules, local bylaws and customary practices are used to regulate use. The long history of domestic and commercial use of baobab products, and the involvement of many stakeholders in the regulation of the resource base, makes Nyanyadzi an appropriate site to study how different governance systems impact on different community members who are involved in various aspects of baobab product use.

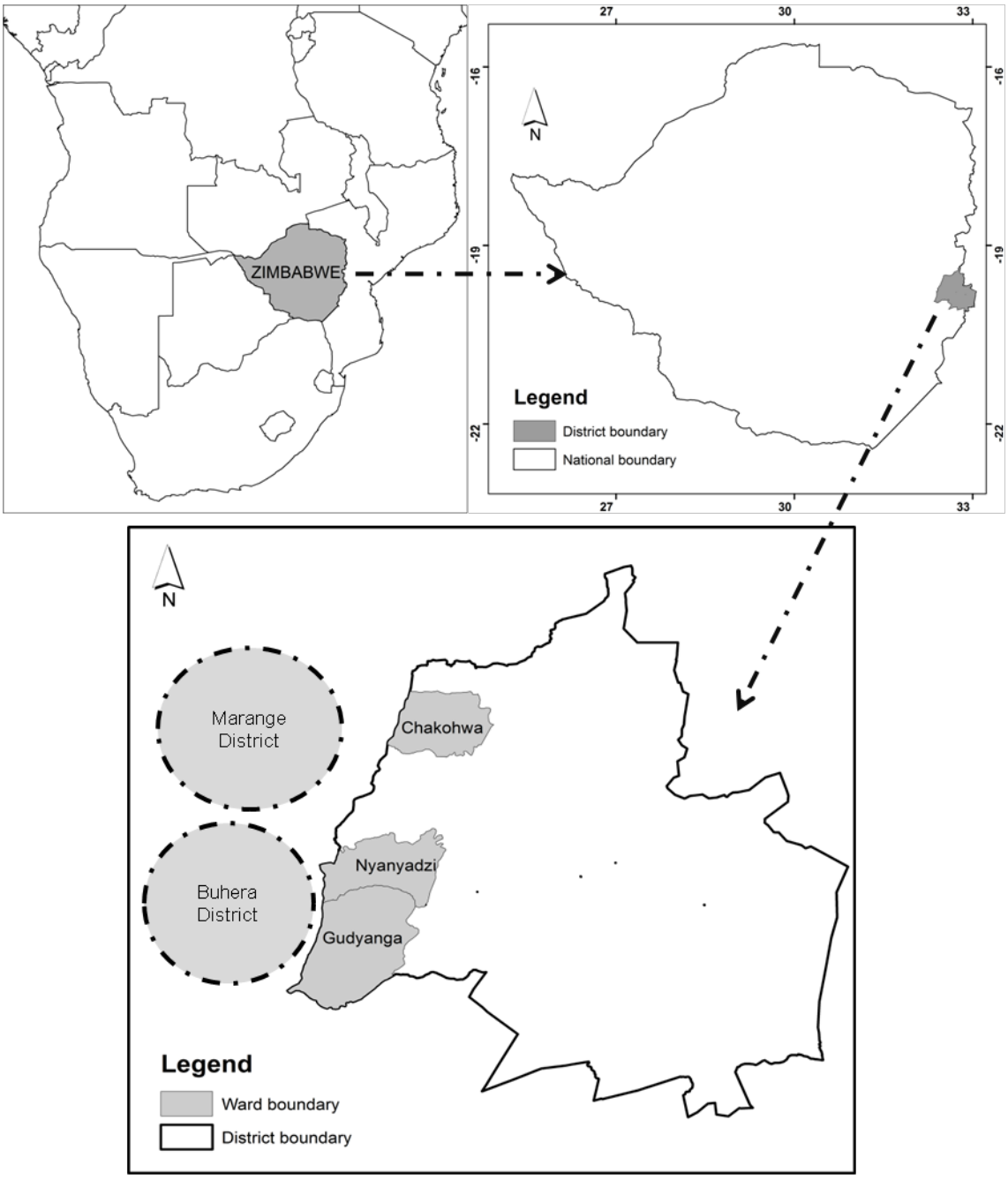


Figure 1: The location of the study sites

1.7 Structure of the thesis

This thesis consists of nine chapters. Chapter 1 identifies and engages with key theoretical debates on governance of natural resources and articulates the research aim and objectives. Background information about the study is presented, along with a summary of the study site and methods.

Chapter 2 presents and engages with literature that informs the thesis. This chapter situates debates around customary and statutory practices within the natural resource governance discourse. Key terms relating to debates around customary practices, as well as theories around governance are discussed.

Chapter 3 describes the case study approach used in this thesis and presents the research methods used to gather data. The philosophical considerations underpinning the choice of research methods used are also presented. The chapter ends with a presentation of ethical issues and lessons learned from carrying out field work in a politically charged environment.

Chapter 4 focuses on the research site, giving the political history of the country and study site from pre-colonial through to independence periods. It also gives a biophysical description of the study site and an overview of the villages where research took place. This chapter also presents a critical analysis of the Zimbabwe policy arena from the pre-colonial to present day period, highlighting key laws, policies enacted and other contemporary developments that have unfolded and that impinge on the use of natural resources.

Chapter 5 is a detailed description of the study site, highlighting key biophysical and demographic characteristics of the area and available livelihood options. The chapter presents uses of the baobab tree, income accruing to different households and expenditure patterns of that income.

Chapter 6 describes customary practices and their effectiveness at ensuring ecological sustainability of baobab use. Three tenure regimes are used to frame the study, namely private, state and communal, and a set of sustainability indicators guide analysis. Tree productivity under each of the tenure systems is analysed and discussed within the framework of broader governance debates.

Chapter 7 presents contemporary customary and statutory systems of governance that are used to manage the baobab tree in the Chimanimani District. Resource users' knowledge, perceptions and compliance with the different forms of governance are presented.

Chapter 8 discusses the research findings in the context of literature and theory discussed in Chapter 2, drawing inferences and insights about factors that shape current relations between

customary practices and statutory forms of resource governance and the consequent ecological and livelihood outcomes of this interplay. The implications of these findings in terms of the role of governance on livelihoods and ecology of baobab in Zimbabwe, and natural resources elsewhere in general.

Chapter 9 concludes by summarising the thesis and situating the findings against the aims and objectives.

CHAPTER 2: LITERATURE REVIEW

First, the chapter develops some conceptual understanding of the term governance. Second, debates related to traditional authorities are engaged with, beginning with Mamdani's thesis of the bifurcated state, then followed by Nuesiri's (2014) scholarship on the re-emergence of traditional authorities in Africa. Third, the chapter explores the emergent theory on *bricolage* (Cleaver, 2012), as well as Giddens's (1984) theory of structuration and agency. Finally, the last part of the chapter presents the theoretical framework that informed the study. The discussions lay the foundation for broader debates with which the study engages and which are articulated in Chapter 8.

1.1 Governance, towards a working definition

Governance has been analysed through a number of different frameworks (e.g. Stoker, 1998; Weiss, 2000; Katerere, 2002; Rival, 2003; Brinkerhoff, 2005; Bartley *et al.,* 2008; Kooiman *et al*., 2008; Hara *et al*., 2009; Sowman & Wynberg, 2014; Wiersum *et al*., 2014). The various discourses on governance are a reflection of its complexity. A common definition of governance is that it relates to the interplay of institutions, actors, principles, policies, mechanisms and processes (Stoker, 1998; Kooiman *et al*., 2005; Treib *et al*., 2007) as individuals and groups express their interests, exercise their rights and obligations, and mediate their differences (Colfer *et al.,* 2011). Initially, in the early 1980s, governance was defined only in binary terms, that is concerning the rules, institutions, and processes that formed the nexus of state-society relations where government and citizens interacted (Brinkerhoff, 2005). However, largely because of the state's failure to discharge of its duty in the governance of natural resources, non-state actors have become increasingly involved in the resource governance arena (Kooiman *et al*., 2008). Therefore, governance is more than government and broadly involves several actors constantly interacting with one another with the ultimate aim to "steer the ship" towards desired destinations (Sowman & Wynberg, 2014) such as achieving greater efficiency in the production of public services (Stoker, 1998).

Because of the interconnectedness of actors involved in governance and efforts to reconcile their various interests, governance is likely to be interactive, network-based or collaborative

(Kooiman *et al.,* 2005). Above all, governance should balance economic, social and environmental objectives (Katerere, 2001) for it to be relevant.

2.1.1 Typologies and characterisation of governance

Conceptually, three forms of natural resource governance are recognised in the literature, namely state centric, co-management and market based. State centric is where the state enjoys the privilege of dictating how natural resources are managed. The state is the sole regulator. To enforce rules, the state typically uses a command and control model, often putting it on a collision course with local people who may depend on the natural resources for survival (Murphree, 1993). Co-governance is an arrangement whereby the state and local people are jointly involved in the governance of natural resources. Examples include joint management arrangements around state forests (Matose, 2002; Kepe, 2008; Hara *et al*., 2009). Lastly market based governance is where market forces dictate how the natural resources are used, usually with the active participation of the private sector (Treib *et al.,* 2007). The continuum explained above is ideal but not actual as it conceals a lot of detail about the level of arrangements which occur among actors involved within each genre of governance.

Western scholars such as Hirschmann (1970), Treib *et al.* (2007), Kooiman *et al.* (2005), and Baldwin (2011b, 2015), have typically explained governance in terms of the administration of rural areas, paying little attention to customary practices and laws. At best, customary practices have been used to regulate access to low value natural resources (Ros-Tonen & Kusters, 2011). In the process, this has created a theoretical blind spot in terms of understanding why resource degradation continues unabated despite a myriad of formal rules by the state (World Bank, 2007).

Governance has also been used, often by funders, in the normative sense, and has been qualified in terms of its quality and effectiveness. The Overseas Development Institute (ODA, 2006) for example lists the attributes that can be used to assess whether governance is good or bad, viz:

- Participation (involvement and ownership by stakeholders)

- Fairness (do rules apply equally to everyone in society)
- Decency (rules are implemented without harming people)
- Accountability (political actors are responsible for actions)
- Transparency (clarity and openness of decision making)
- Efficiency (use of limited resources for greatest outputs)

To local people, however, governance is about supporting livelihoods and sustainable use of resources (Bennet & Dearden, 2014). The typology presented above appears to put an emphasis on process rather than outcomes. Its suitability is thus questionable in the context of developing countries where natural resources are central to local livelihoods, where customary practices and laws are often intermingled with statutory systems, and where complex negotiations and interaction occur at the local level. To understand these complexities, one needs to use a framework that captures the nuances that happen at that level.

There has been growing consensus among scholars that governance is the most significant obstacle to the sustainable use of natural resources (CIFOR, 2003; Kooiman *et al.,* 2005; World Bank, 2008; Sowman & Wynberg, 2014; Sunde, 2014). In rural Africa and Zimbabwe in particular, the governance of natural resources is critical because communally-owned natural resources drive the local economy and livelihoods (Cavendish, 2000; Frost *et al*., 2007; SAFIRE, 2010; Jagger *et al*, 2014). Weakly governed resources may result in what Hardin (1968) termed the "tragedy of the commons" as every stakeholder tries to maximise the benefits they get from the commons without due care of the resource base. When that happens, local livelihoods are compromised. Although Hardin's projection was based on open access resources regimes with no regulatory mechanisms or local management practices in place, if not properly regulated, communally-owned resources could slide into open access regimes and suffer the tragedy that Hardin projected (Ostrom, 1999). It is therefore not an overstatement to say that an enabling governance framework is a priority for the sustainable use of natural resources and the sustenance of livelihoods.

Increasingly, the call to consider both customary and statutory practices in the governance of natural resources in rural areas across Africa has been made (Kowero *et al.,* 2003; Baldwin 2011a, 2015; Nuesiri, 2014). As observed by Marfo (2010), meshing customary and statutory

forms of governance results in nested institutions whereby both forms are ingrained within each other. But melding the two forms of governance represents a significant challenge. This arises from the long history of interaction between customary and statutory forms of governance.

2.2 The state's role in natural resource governance

To regulate resource use in rural areas, the state depends on a range of legal instruments. These include moratoria, permits, bylaws, policies, fencing off areas of ecological importance, and co-management arrangements (Matose, 1994 & 2002; Ndoye & Awono, 2010; Kozanayi *et al*., 2014). In the majority of cases, the state uses command and control to regulate natural resources. These rule-based practices have been criticised for concealing the complexities of contested and overlapping rights (Nhira, 1998; Campbell *et al*., 2001). As noted by Cleaver (2012), there is oversimplification of local complex realities that make local practices resilient. In much of the developing world the state has its own weaknesses such as insufficient funding of forestry departments, poor working conditions which lead staff to engage in corruption, and inadequate enforcement of policies and laws (Ndoye & Awono, 2010).

The state's drive to participate in the governance of natural resources is typically motivated by many factors, including fulfilment of a legal mandate (Mandondo, 2006) and the need to ensure ecological sustainability (Kozanayi et al, 2014). Other factors may include revenue generation, ecological concerns and the need to be in line with decentralisation initiatives (Kaimowitz & Shiel, 2007; Laird *et al*., 2010). Critics argue that resource governance in states that were colonised has largely been unsuccessful during and after the colonial period. As Murphree (1993:4) remarks "management by the state has demonstrably been ineffective in both the colonial and post-colonial eras". The reasons for the failure suggest inappropriate forms of governance being used to regulate resource use. As noted by Kooiman *et al.* (2008:7), "In the designing of natural resource management structures, in the majority of cases in many developing countries, organisational structures have been copied from developed countries, not considering the completely different task they are confronted with".

The reality is that in rural African communities, daily life, especially in places that are far away from the central state, is almost entirely governed by customary practices (IIED, 2009) or

operate side by side with the formal laws resulting in a state of "legal pluralism"[6] (Tamanaha, 2008; Clarke & Jupiter, 2010)[7]. Traditional authorities who are the enforcers of customary practices are ubiquitous in the administration of much of rural Africa (Economic Commission for Africa (ECA), 2007; Hara *et al.,* 2009). They have operated alongside elected statutory bodies since the colonial era and there are many debates surrounding their roles. Key debates within the discourse of traditional authorities are engaged with below.

2.3 The state and encounters with traditional authorities

2.3.1 Mamdani's thesis on bifurcation

The history of African rural areas is littered with episodes of the empowerment and disempowerment of traditional authorities (TAs) and the rising and waning of customary practices. To establish empires in Africa, the British colonialists either destroyed existing customary practices or allowed such systems to operate side by side with imposed statutory systems under what Mamdani (1996) has called bifurcation rule[8]. Mamdani hypothesised that in order to suppress the majority populace, the colonial powers had two sets of rules: customary practices enforced by traditional authorities for blacks (subjects), and statutory laws for whites (citizens). In Zimbabwe, the British colonial government adopted practices that relegated indigenous peoples and their social values to a separate set of rules rather than destroy these traditional systems completely.[9] In South Africa, a study on the role of customary practices in water governance found a similar trend where the apartheid regime in that country used TAs to extend their influence (Kapfudzaruwa & Sowman, 2009). Despite criticisms regarding the adulteration of customary practices and traditional authorities by some regimes for political expedience, customary practices have played a key role in shaping the use of natural resources.

[6] The co -existence of many forms of legal systems such as traditional and legal in a specific area.

[7] Scott (2009:13) called these places n*onstate spaces,* which are locations where, owing largely to geographical obstacles, the state has particular difficulty in establishing and maintaining its authority.

[8] Informed by the French philosopher Descartes who argued that to build a new city, in an area where another city already exists, one had to completely destroy the old city first (Chimuka, 2001).

[9] Reasons for retaining the traditional authorities were many, but were largely due to the convenience of administering huge areas at a low cost and to give autonomy to local people (Ranger, 1983; Geshiere, 1993; and Mandondo, 2001).

As part of the strategy to subjugate black people, colonial powers gave TAs a lot of power over their people to the extent that the TAs ended up being despotic and powerful. Mamdani used the allegory of a clenched fist to show how power was concentrated in the hands of the TAs. Using his thesis of indirect rule, Mamdani (1996) illustrated that repressive colonial regimes used TAs to oppress locals in the name of "enforcing" tradition. After gaining independence, most African states adopted the traditional authority, particularly chiefs after deracialising them (Mamdani, 1996).

Despite the central role of natural resources in supporting rural livelihoods, and the influence of TAs over such resources, Mamdani (1996) is curiously silent on the impacts of the so-called despotic TAs on livelihoods and natural resources. Mamdani (1996) also places a focus on chiefs, which were the target of colonial systems, without necessarily recognising the multi-tiered nature of traditional structures. Indeed, villages' heads, the lowest tier, are those directly involved in the day-to-day processes of governing natural resources (Makumbe, 2010). Such systems were not directly controlled by the colonial systems to the same extent as those of chiefs (Makumbe, 2010).

Critics of contemporary forms of customary governance raise doubts about the authenticity of custom/tradition, caricaturing these as colonial constructs or invented traditions that the post-colonial governments simply "de-racialised" and replaced with a form of traditional system of governance that subscribed to the policies of the new regime (Ntsebeza, 2003, 2005; Hobsbawm & Ranger, 1983). Mukamuri (1995b) for example, argues that local belief systems are a means through which the TAs in societies impose their hegemony. Chanock's (1998) and Berry's (1989, 1993) legal anthropology offers a balanced argument as they fuse criticism of the efficiency of customary practices (Mukamuri, 1995a) with the "invention of tradition" (Hobsbawm & Ranger, 1983) narratives, and argue that there is no culture that can be considered ambient and canonical. They assert that change is an inherent feature of customary practices, and has made customary systems remain relevant and resilient over time.

Whether or not one agrees with these views, TAs still remain a cornerstone of rural governance systems that define, redefine, safeguard and implement customary practices (McAuslan,2005; Mutimukuru *et al.,* 2008; Hara *et al.,* 2009). The research in this thesis draws

on the notion that customary practices are important in the governance of natural resources in the rural landscape and that such practices are changing or have changed to suit the prevailing context[10]. In Chapter 7 I use empirical evidence to illustrate how local customary practices changed in response to changing socio-economic factors. Customary practices do not consist of static norms, they are indeterminate and adaptive. The notion of an unchanging customary system is a myth of the colonial era. Further, I argue after Nuesiri (2014) that as the trend on the broad topic of governance gains currency, so too does the re-emergence of TAs and use of customary practices to regulate access to natural resources across Africa. This is motivated by the observation that the last decade and a half has seen TAs becoming stronger and more prominent in the governance of rural areas (ECA, 2007; Nuesiri, 2014), including in Laten America (Cronkleton & Pacheco, 2010; FAO, 2015) and Nepal (FAO, 2015)

2.3.2 Nuesiri scholarship on the re-emergence of traditional authorities across the African continent

Nuesiri submits that as traditional authorities re-emerge in the administration of rural areas, their influence over the governance of natural resources is also increasing. I find the interplay between the state and TAs to be at the centre of governance as it reveals the outcomes of using customary practices as one of multiple governance approaches to regulate use of natural resources in developing countries.

Nuesiri's (2014) recent work on the re-emergence of TAs has been authoritative and has regenerated debate on the role of TAs within the framework of governance. Nuesiri's work builds on that of post-structuralists, and presents a legal pluralistic view which celebrates the existence of both customary and statutory forms of governance. According to Nuesiri (2014), across much of Africa, TAs are regaining prominence in the administration of rural areas. These re-emerging TAs are overlaying existing statutory forms of governance. This creates challenges in the administration of rural areas as the TAs and elected structures fight for political space. The task of using both forms of governance is complex as aptly argued by Nuesiri (2014: 48): "Establishing democratic local government as the singular public decision-

[10] Practices are inclusive of tradition authorities, therefore there is divergence from Mamdani (1996) who focused only on the role chiefs play instead of the broader practices.

maker at the local level, where traditional authority is just one among a number of civic actors holding local government to account, is a formidable challenge".

The re-emergence of TAs has also been described by researchers focused on approaches to development in rural areas (Ubink, 2008; Baldwin, 2011a). Ubink (2008: 14) argues that the resurgence of TAs is facilitated by the state as a way to "strengthen the position of the government by integrating tradition into the space of governmental power as a symbolic, legitimising discourse". Above all, TAs continue to enjoy legitimacy from both the state and traditional systems (Ubink, 2008). In fact, as noted by the ECA report (2007), chieftaincy in Africa is an integral part and a vital element of the social, political and cultural establishment of African communities. This makes TAs strategic players in the governance of rural areas and natural resources.

In Zimbabwe, the Rukuni Land Commission (1998), set up by the government to assess appropriate land use models for communal areas in the country, unequivocally made the case for the management of communal areas and resources at village level by traditional institutions. Subsequent to this recommendation, the Traditional Leaders Act was promulgated, re-empowering previously disempowered TAs (Chapter 4).

Nonetheless, there are mixed results from the overlaying of customary and statutory forms in the governance of natural resources across much of the developing world (Wynberg & Laird, 2007), including usurpation of roles of traditional authorities by the state (Mukamuri *et al,* 1998) and Nuesiri (2014) does not engage with this important aspect. Like Mamdani, Nuesiri tends to focus his analysis of TAs at the level of chiefs, ignoring the local level village heads and other authorities that are directly involved in the governance of natural resources.

2.3.3 Traditional authorities as enforcers of customary practices

Anthropological studies in Zimbabwe note that TAs have been the guardians of customary practices (Bourdillon, 1999)[11]. Ubink (2008: 7) concurs, offering a broader view of TAs vis a vis

[11] I use traditional authorities to refer to the whole gamut of traditional institutions: village heads, headmen and chief and aides to these structures. These institutions are responsible for enforcing and upholding customary practices.

natural resource management: “Traditional authorities are a characteristic feature in the landscape of many modern African states, and perform a variety of important functions including natural resource management, local development and are in various ways linked to modern state structures”. Other latter-day scholars have also averred the role of TAs and customary practices in the management of natural resources. Nyamnjoh (2002) argues that Africans are reluctant to giving up on chieftaincy and customary practices because these define who they are. According to Nuesiri (2014:41), “Chiefs ideological power stems from the shared cultural ideology with their subjects on how the world is structured. It is no exaggeration to state that rural Africa takes it ideological starting point as the world of the ancestors, and chiefs are viewed as the link to the ancestors”.

The role of TAs in ensuring democracy and peace in Zimbabwe and across Africa is well documented (Boone, 2003; ECA, 2007; Makahamadze *et al*., 2009; Baldwin, 2011b, 2015; and Nuesiri, 2014). A fundamental difference between TAs and statutory authorities is in terms of the way the two forms of governance engage with the populace. Nuesiri (2014:18) notes that “customary (traditional) authority leadership relies on family and kinship ties in exercising its functions, while modern states rely on the public service and markets to deliver services”. This distinction is particularly important as familial ties are generally strong in rural areas and are used as a form of social capital to access natural resources, while the state institutions across much of Africa are weakening due to lack of funding, corruption, lack of credibility, capacity (Kowero *et al*., 2003; Ndoye & Awono, 2010; Biti, 2012).

2.4 Debates on customary practices

2.4.1 Customary practices

Customary practices are a traditional way of doing things, specific to a particular society and time. Custom itself is a way that societies operate in terms of laid down practices that regulate day-to-day behaviours of members of society (Katerere, 2001). Such practices might include taboos, language and idioms, epistemologies, cosmologies, use of social capital, sacredness and historical ties (Schoffeleers 1979; Bourdillon, 1999; Katerere, 2001). Oftentimes, these practices are not written down and are regarded as “rules of the heart” or civility and are not

visible in public decision-making contexts. However, these need to be understood, "as they provide a way of ordering the social and natural world, of accommodating unpredictability and of defining proper responses to changes" (Cleaver, 2015: 9). Further, customary practices are important as they have been one of the foundational elements of the laws of all states in Africa (McAuslan, 2005; Wynberg & Laird 2007).

A distinction between customary practices and customary law has to be made. Customary law as a state construct, means codified set of laws that are applicable to a certain class of people for example blacks during the colonial era in Zimbabwe (Katerere, 2001). Some authors use customary law to refer to customary practices, but for the purposes of this study I am talking about customary practices which portray the day-to-day arrangements around natural resources management. These "rules of the heart", more than codified rules in books of statutes, shape the day-to-day governance of natural resources.

2.4.2 Early debates: Trajectories of customary practices

Early scholars of customary practices and traditions relating to natural resources romanticised or valorised them as "ritually directed ecosystems", or religions with a logic informed by conservation objectives (Turner, 1967; Schoffeleers, 1979). These early scholars extolled the ecological virtue of indigenous knowledge systems in an uncritical manner (Anderson, 1996). While these have to be understood as researchers from an epoch when customary practices were often romanticised, more contemporary scholars still valorise the same customary practices, arguing that they are not only the cornerstone on which statutory laws are built, but are also adaptive to changing contexts (Matowanyika 1991; McAuslan, 2005).

Anthropologists, sociologists, policy researchers and economists have also written extensively on customary practices (Hobsbawm & Ranger 1983; Berry, 1993; Chanock 1998; Piot 1999), as have complex system scholars who have stated that there is no system that exists on its own, making the case that what is considered customary at the local level might be a "hybrid" of different cultures resulting from the interface of the local with the outside world (Gunderson & Holling, 2002). If anything, every system is intertwined with a bigger and ever revolving system (Anderson, 1996). Poit (1999), using an example from West Africa, argues that some communities can have strong customs even if they are linked to the outside, global

world. Anderson (2006), concurs, drawing insights form his work in China. Admittedly, there is no culture that is ambient and canonical (Berry, 1993; Chanock, 1998). This dynamism is a key feature which allows the system to adapt to changing contexts: social, economic or political. A common blind spot among the early scholars of customary practices has been the omission of the outcome of the interplay of the customary systems with statutory forms of governance.

2.4.3 Customary practices in the realm of natural resource governance

Overwhelming evidence shows that people living next to forests are *de facto* owners and usually use customary practices to manage such forests (Ingram *et al*., 2015). In Zimbabwe, Campbell *et al.* (2002a) conclude that even though considerable responsibility for resource governance is bestowed on statutory Rural District Councils, *de facto* rules and regulations are centred on TAs. Governance of natural resources in most rural areas is thus principally about local rules, far more than it is about statutory rules. To local users, customary systems are legitimate and the principles of customary practices which govern access, rights and use are well understood. However, they may not conform to statutory legal procedures (Pollard & Cousins, 2007). Cock *et al (*2012) argue that the gamut of literature that celebrates the governance of natural resources in rural areas tends to miss out on these important practices). For state policy makers, customary practices may pass as mundane without recognising their highly sophisticated norms. As a consequence, biodiversity conservation programs have often been implemented without due regard for local customary practices (Nianyong, 2011). Murombedzi (1998) makes a compelling argument that the state's attempt to elbow out customary practices and usurp control over governance of natural resources has in fact resulted in resource degradation in communal areas.

Though the resourcefulness of local people anchored on customary practices and rules has been acknowledged (Campbell *et al.,* 2002b), it is important not to romanticise the ability of TAs to ensure ecological sustainability (Mandondo & Mapedza, 2003; Ohja *et al*., 2016)[12]. The

[12] The sustainable utilisation of NTFPs can be defined as the level of harvest that does not impair the ability of the harvested population to replace itself, that is, the rate of harvest should not surpass the rate of regeneration (Ticktin, 2004; Mutenje *et al.,* 2010).

juxtaposition of customary arrangements with statutory forms of governance raises questions about the effectiveness of such arrangements in ensuring ecological sustainability especially under use pressure (Cerutti *et al.,* 2012). Also, as argued by Ubink and Quan (2008), local institutions are vulnerable to the power plays of elites, as well as to the politics of exclusion by powerful actors like the state in a modern and globalised world.

2.5 Theoretical frameworks for understanding governance

2.5.1 Kooiman's model of interactive governance

Several frameworks to understand governance have been suggested but most are general and not specific enough to capture complex interactions at the local level (Ostrom, 1990; Kooiman *et al* 2005; Sowman & Wynberg, 2014). Moreover, literature typically considers governance as separately involving the state or TAs, yet in reality, these two operate side by side or are overlaid upon each other. The added complexity of managing natural resources is seldom considered when analysing the interface between the two forms of governance. The main challenge is that governance is an ever-evolving, interactive phenomena which links the local with the national through various means. Understanding such a dynamic and adaptive phenomenon requires a theoretical approach that integrates elements of scale and dynamism.

The model of interactive governance proposed by Kooiman *at el (*2005) is pertinent. This model recognises interactions between orders of governance. Interaction of actors takes place within institutionalised frameworks of rules, norms, interests, social connections, and knowledge of the systems and principles. As Figure 2 shows, structures of governance are ordered in an integrated manner. Such ordering enables analysis of actors involved in governance.

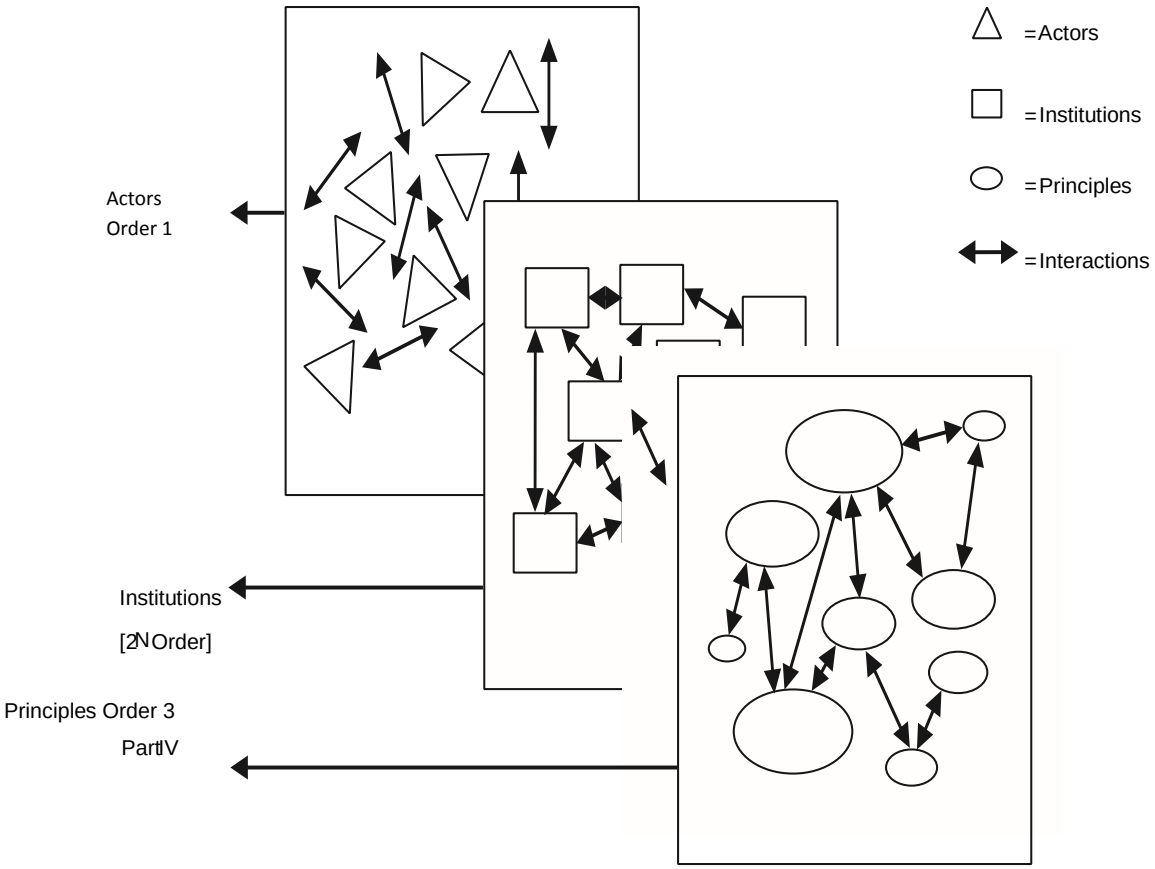


Figure 2: Orders of governance (Kooiman *et al.*, 2005)

In this framework, first-order governance takes place wherever people/actors and their organisations interact in order to solve societal problems and create new opportunities (Kooiman *et al.*, 2005). This order is largely focused on the identification of problems by societal actors. Conceptualisation of problems as well as the formulation of solutions is typically problematic due to the presence of many actors usually with different agendas and expectations. Identified solutions will eventually shape the day-to-day interactions of all the actors concerned.

Second order governance in this model is about instruments and institutions that are used to effect responsive governance. Mahon *et al.,* (2009: 318), states that second order governance focuses on "the actions and tools that implement governance". There are several instruments used that include customary and statutory forms of governance. The interplay between these two forms of governance is interesting because it influences the

outcome of governance systems in place. Any mismatch between policy and reality on the ground will result in unintended consequences (Matowanyika, 1991; Wynberg *et al.,* 2015). Therefore, it is important to understand how the different instruments from the different institutions operate together.

Third order governance relates to the principles guiding governance activities. Critical issues considered under this order try to avoid universalising issues rather than being sensitive to local contexts. Key questions guiding the framing of principles include those guiding resource use and their synergies or inconsistences, relevance, and divergencies in world views. These principles are important because they eventually inform the nature of the institutions put in place (Order 2) to enforce the agreed rules. Principles also shape the framing of problems and solutions (Order 1).

Kooiman's conceptual framework provides valuable insights into the study of governance especially when investigating interactions between the local, national and international levels. However, a key weakness of the model is that it is general and is based on European contexts which do not clearly capture local contexts in Africa. African contexts are unique and complex due to the history of heavy dependencies on natural resources by local people as well as conflicts between the state and TAs that date back to the colonial era. The model is also silent on livelihoods and ecology, key drivers of governance in the context of most developing countries.

To understand the governance of natural resources in the context of the developing world, theories that embrace notions of complexity are relevant, including local level dynamics between customary and statutory forms of governance, both of which have shaped the governance of rural areas over a long time. It is argued, after de Koning (2014) that there is no direct and linear relationship between institutions and levels of governance. In particular, resource users use various means to access resources and to influence the structure of regulating institutions (Giddens, 1984; Ribot & Peluso, 2003). Below I engage with alternative and perhaps more appropriate concepts to use to understand natural resources governance in the context of rural Zimbabwe.

2.5.2 Access to natural resources as a key tenet of governance

Access to natural resources is a key parameter in governance and is complex in the African context where it stands between impoverishment and survival for rural people (Ribot, 1998; Nemarundwe & Kozanayi, 2001; Ribot & Peluso, 2003; Cleaver, 2012). Broadly, access is about who gets (or does not get) what, how and when (Ostrom, 1990; Ribot & Peluso, 2003). Both statutory and customary practices may be used to regulate access (Ostrom, 1990; Schlager & Ostrom, 1992; de Soto, 2000).

In mainstream institutional debates, property rights define access (de Soto, 2000) and have to be clearly defined in order to be enforceable (North, 1990; Ostrom, 1990; Schlager & Ostrom, 1992; de Soto, 2000). In their conceptualisation of property rights for natural resources, Schlager and Ostrom (1992: 250) conceived of access as, "the right to enter a defined physical property". Such a conceptualisation embodies legal elements that bestow bundles of rights to resource users and a clearly mapped geographical space.[13] While this conceptualisation has been used widely in the study of common property regimes, this is a limited view of access especially when considering communal areas in developing areas where property rights are poorly defined and locals enjoy usufruct rights to forestry resources.

Tenure systems typically comprise four types: private, communal, state and open access (chapter 6). While this categorisation of tenure is appropriate to analyse rights and duties of resource users, property rights are more complex than portrayed by the four broad classes and in practice, natural resources are managed and used under a range of different property regimes that might be enfolded within each other (Hara *et al.,* 2009). Bruce *et al.* (1993) offer a more detailed typology of tenure systems and note that tenures may be overlapping rather than discrete. Moreover, there are *de facto* land tenure systems that involve a multiplicity of actors engaged in struggles over property rights. An examination of the territory of a single community where land is governed by indigenous tenure, for example, might reveal that the landscape is divided into a mosaic of land under different uses and tenure systems. Each area or mosaic constitutes a tenure niche, that is a space in which access to and use of it is

[13] In their typology of bundles of rights, Schlager and Ostrom (1992) identify five variants namely: access, withdrawal, management, exclusion, and alienation.

governed by a common set of rules. Property as a concept, therefore, is insufficient to delineate all the intricate pathways used by different actors to gain access to natural products, especially for a tree like the baobab that has multiple uses and users. These tenure systems are neither static nor simple – they change over time and under different management systems (Bruce *et al*., 1993). For example, with weak management systems in place, state property can become open access or communal property (Ostrom, 1990). Customary systems might be used across all tenure systems, although the degree of use differs and is often most pronounced in communal property and less so in state-owned property (Bruce *et al.,* 1993).

In theory, a positive relationship exists between the granting of tenure rights and access to benefits by the right holder. However, as Ribot and Peluso (2003) show, power and not access rights, may be the key in determining the volume and direction of benefit flows. A broader and nuanced notion of access has been given by Ribot and Peluso (2003), who considered access to include not just rights but the ability to gain access to a resource, stating "access is about all possible means by which a person is able to benefit from things" (Ribot & Peluso 2003: 156). Ability is derived from many sources including power and adroit use of wealth, access to labour, use of power (legitimate and illicit), corruption, force, having access to individuals and institutions with authority to regulate and drawing from social capital (Berry, 1989; Dasgupta, 2000; Ostrom, 2000; Ribot& Peluso, 2003; Kepe, 2008).[14] This conceptualisation celebrates a gamut of means that are used to gain or deny access to resources, of which property is a subset of access relationships. Those with access to a resource can control the level and nature of benefits that others can derive to the resource (Mandondo, 2001).

Generally, at societal level, excessively restrictive regulation of access to resources even by individuals is abhorred and fiercely resisted by resource users. Examples from three different districts in Zimbabwe are instructive: (1) villagers that boycotted a neighbour's funeral because he did not allow his neighbours access to fire wood in his field (Mandondo & Kozanayi (2006); (2) a community in a dry area that threw a dead puppy in the well of a neighbour who

[14] In some cases, social capital is considered as a double-edged sword, "it opens up some opportunities while restricting others" (Ostrom, 2000: 176). However, in this study, I witnessed the overwhelming use of it by rural people to gain access. Access is mediated through membership to a group such as community, religious, familial and economic groups (Cleaver, 2012).

had fenced off and locked his well from his neighbours (Nemarundwe & Kozanayi (2002); and (3) communities around a state forest that used covert and overt ways to resist restricted access to forest resources (Matose, 2002). In all three examples, there was a revision of resource-sharing arrangements after the incidents. Thus, through various local actions, resource harvesters in communal areas are able to resist and influence the way that authorities regulate access to natural resources. Recognition of nuanced access arrangements is critical in a context where multiple actors mediate and negotiate access to common pool resources and natural resources are central to local livelihoods. These local level arrangements are normally overlooked in the study of governance, yet they shape the day-to-day governance of natural resoucres.

2.5.3 Agency and the concept of structuration

Within the domain of natural resources, the discourse about resource governance has been greatly shaped by institutional theorists, particularly Douglass North (1990) and Elinor Ostrom (1990) on the premise that institutions regulate human behaviour. Ostrom's design principles in particular have swayed thinking[15]. According to neo-institutionalism, people are disciplined by given rules, norms and beliefs in a society (North, 1990; Ostrom, 1990; Arts *et al*., 2012). Underlying Ostrom's design principles is the need to get the institutions right by creating robust institutions as a precursor to the effective governance of natural resources (Ostrom, 1990; Nemarundwe, 2003; de Koning, 2014). Getting the institutions right is viewed as critical to preventing degradation of natural resources through regulating the behaviours of harvesters. The functionalist notion of institutions implied by institutional theorists and Kooiman *et al* (2005), assumes that the relationship between the institutions and the people to be regulated is unidirectional; that is, human behaviour can be regulated by crafted institutions and institutional arrangements.

However, because access to natural resources is a matter of life and death to people in rural areas, they are not passive recipients of policy from above. Rather, they actively engage with

[15] Ostrom designed eight principles namely, 1. clearly defined boundaries, 2. congruence between appropriation and provision rules and local conditions, 3. collective choice arrangements, 4. monitoring, 5. graduated sanctions, 6. conflict resolution mechanisms,7. minimal recognition of rights to organize, and finally, 8. nested enterprise. These principles have been used to assess models of resource governance for robustness and endurance.

the regulators whenever their livelihoods and environments are threatened. To be able to act in response to the actions of the regulators, actors have agency – a notion that is illustrated by Giddens's (1984) seminal work on structuration. Unlike functionalist theory that portrays structures of society/ institutions as having the power to regulate and limit human behaviour (North, 1990; Ostrom, 1990) the structuration theory argues that the very harvesters whose behaviour institutions/structures try to regulate, are not powerless. Rather, they have agency which enables them to extricate themselves from unfavourable conditions and influence structure (Giddens, 1984). In sociology, human agency is celebrated as a liberating factor. Giddens (1984) and later on, Cleaver (2012), challenge the reductionist and connectedness model of institutions proposed by neo- institutionalists. In his important seminal work on agency and structuration, Giddens (1984) posits that relationship between the governed and the governing is complex. The influence of institutions is not unidirectional as espoused by mainstream institutional economic theory (North, 1990). Instead, so argues Giddens (1984), resource users exhibit agency to influence the form and functions of the structures that aim to regulate the behaviour of, for example, resource harvesters, in what Giddens (1984: xxi) calls the "duality of structure". [16] This refers to, "Structure as the medium and outcome of the conduct it recursively organises; the structural properties of social systems do not exist outside of action but are chronically implicated in its production and reproduction", (Giddens 1984: 376). Through the iterative interaction between the regulators (structures) and the resource users (who have agency), the form of governance in place will ideally, improve. This theory helps to explain why resource harvesters are able to continue harvesting natural resources even in instances where strict rules and several regulatory institutions are in place. It also explains why regulatory authorities sometimes change their strategy when regulating access to natural resources. This understanding is particularly important in interactive governance where several actors are involved in regulating access to natural recourses.

[16] See also Le Grand (2003) on the same, but looking at public administration in the United Kingdom. She argues that if people are unhappy with the form of governance or service delivery, they walk out rather than just be willing victims. Scott (1985) also gives a cocktail of actions so called weak people use to extricate themselves from oppressive situations. Other scholars have referred to this as "voting with their feet" (Nhira *et al.,* 1998).

2.5.4 Bricolage scholarship, an emergent scholarship in resource governance

Interactions of actors in the governance arena are complex and dynamic. In his structuration theory, Giddens (1984) did not explicitly explain how the actors involved interact with each other. Drawing on "post-institutionalist" perspectives, Cleaver rejects the over-formalised managerial approaches, preferring instead to embrace a variety of partial and contingent solutions that are more reflective of the ever-changing evolution of institutions. Building on Giddens' agency and structuration theory, Cleaver (2012), postulates that the institutional landscape is more complex and messy than envisaged by most functional institutionalists. Cleaver argued that actors (regulators and harvesters/resource users alike) are constantly interacting and reconfiguring themselves in multiple and unpredictable ways that result in different desired outcomes, so that a neat institutional fit is elusive. *Bricolage,* a French word meaning making do with whatever is available, is described as the likely approach (Cleaver, 2012). As Cleaver and de Koning (2015:4) explain, "Institutional *bricolage* is a process through which people, consciously and non-consciously, assemble or reshape institutional arrangements, drawing on whatever materials and resources are available, regardless of their original purpose". In this process, old arrangements are modified and new ones are invented. Institutional components from different origins are continuously reused, reworked, or refashioned to perform new functions. Adapted configurations of rules, practices, norms and relationships are attributed meaning and authority.[17] These refurbished arrangements are the necessary responses to everyday challenges, and are embedded in daily practice (Cleaver and de Koning, 2015: 4). By deduction, there is potential to facilitate melding of different forms of governance in order to come up with a form of governance that ensures economic and ecological sustainability. An extreme end of the management continuum that resonates well with Cleaver's *bricolage* scholarship is Ruitenbeek and Cartier's (2001) *laissez faire* hands off approach; this posits that left to themselves, institutions will have a way of organising themselves to solve local problems.

Overall, *bricolage* can also be considered as an adaptive strategy to manage natural resources (Cleaver and de Koning, 2015) and as a way for dealing with fragmented or weak governance

[17] Explaining the link between the *bricolage* scholarship and Giddens's structuration theory, de Koning and Cleaver (2012: 281) noted that, "*bricolage* is an articulation of the dynamic relationship between social structure and individual agency". It is not just an opportunistic amalgamation of pieces.

arrangements (Ingram *et al*., 2015). This makes the *bricolage* scholarship an appropriate theoretical lens through which to examine the governance of communally-owned resources, especially where a multiplicity of institutions (customary and statutory for example) are constantly changing and interacting. Furthermore, because of the ever-evolving nature espoused under institutional *bricolage*, institutional endurance and change can be better understood, enriching understanding of human agency and relations of authority across levels. Lastly, the concept of *bricolage* is relevant to understand governance issues in Africa in general, and Zimbabwe in particular, whose history is littered with numerous phases of conquest, disempowerment and re- empowerment of TAs (Kozanayi *et al.,* 2014). A clear understanding of the intricate interface between the two forms of governance, beyond the work done by Mamdani (1996), thus helps to inform current and future policy directions. In the present study, an investigation of how the different actors involved in the governance and use of natural products interact with one another is pursued in an effort to come up with workable solutions to the problems they face individually and collectively. Such an understanding helps inform the creation of forms of governance that are relevant for the management of natural resources at the local level.

2.5.5 Embeddedness of institutions with a bricolage

Implicitly, *bricolage* scholarship celebrates the embeddedness of institutions in social relations as opposed to the discrete and fixed bodies implied in Ostrom's (1990) design principles and Kooiman's orders of governance. Peters (1984), Granovetter (1985), and more recently de Koning (2014) explain how the concept of embeddedness is relevant to the *bricolage* theory. Peters (1984:29) argues that,

> claims and control over resources, and authority over things and people, are premised on an ideology or a set of meanings. Struggles over resources or over power, then, necessarily take place in terms of such meanings. These meanings, are both shared and disputed: different categories or groups assign different meanings, different definitions or different emphases at different times to known concepts, events and acts. Hence one event, one institution or one concept may be defined and interpreted in a number of ways and in ways that contradict each other.

In the case of customary practices, these can be used to legitimise existing practices, or challenged as oppressive or be redefined to suit current situations.

Granovetter's (1985) theory of economic embeddedness resonates well with Peters' proposition; he posits that social relations are embedded in economic systems which in turn are embedded in social systems. The two are intertwined and interdependent. Embeddedness has been used to analyse networks of relationships among individuals and other bodies to explain economic actions and outcomes. Thus, relations between actors go beyond economic interactions to include social interactions that in turn shape the economic interactions.

In an attempt to explain how the different actors interact with the context of resource governance, de Koning (2014) takes further the theory of embeddedness, suggesting a framework that recognises three typologies.

The first is *aggregation* which is the recombination of newly introduced institutions and locally embedded institutions and social characterisations such as culture, routines, traditions, social norms, needs, expectations and experience (De Koning & Cleaver, 2012). This results in a more or less harmonised arrangement. The second, *alteratio*n, is the adaptation of institutions. This can apply to both newly introduced institutions and locally embedded institutions where local actors might tweak forest or other regulations to make them better fit their livelihoods or identity. Lastly, *articulation* involves the claiming of traditional identities and culture and the rejection of newly introduced institutions. Articulation might occur when introduced institutions are in direct conflict with local identities (de Koning 2014: 360). Customary practices and statutory forms of governance have clearly permeated each other at different levels over time due to recurring interactions. As they interact, both forms of governance might strengthen and undermine each other's performance (Van Rouveroy van Nieuwaal & Emile, 1996; Nemarundwe, 2003; ECA, 2007; Meagher, 2007). De Koning's framework, together with Peter's embeddedness help to understand the intricate ways through which actors interact within the realm of governance.

The interaction of actors occurs at different scales, in a lateral and hierarchical fashion. Sometimes interaction occurs between local actors alone, and at times it might be between local and higher levels of governance. Ojha *et al.* (2016) use the concept of delocalisation to describe this important phenomenon. "Delocalisation means the process through which local communities become intimately connected to the actors outside of the local domain" (Ojha *et al*., 2016: 3). The concept of delocalisation is particularly important in cases where resource use transcends local spatial and institutional scales or in instances where local level and higher-level actors like the district engage in the governance of natural resources. Increasingly, as some natural resources become commercialised, district level actors are getting involved in the governance of natural resources at the village or ward level. In the case of the Kooiman model, delocalisation helps to understand the linkages between the different orders of governance.

2.5.6 History as a negotiating tool

To constitute and reconstitute resource-sharing arrangements, actors use current and historical knowledge of their circumstances (Cleaver, 2015). Overall, Cleaver and de Koning (2015: 6) concludes, "History is at the centre of the study of governance as colonial and post-colonial governments have interacted with TAs in ways that have had profound impacts on the governance of natural resources in communal areas". This resonates with observations made by Capistrano and Colfer (2005), that the day-to-day governance of natural resources is greatly dependent on historical context. That history assumes many dimensions, including the history of ethnic relations between members in a society or state-peasant's relations over time. To understand current governance practices and dynamics, a historical overview and understanding of the relationship between actors is imperative especially for a country like Zimbabwe that has a long history of interface between the state and TAs. Despite this importance, history, just like livelihoods and ecology, is typically omitted in frameworks proposed for the governance of natural resources. This is a theme I plan to further explore in this thesis.

2.6 Conclusion

Review of the key debates, theories and frameworks used to analyse governance of natural resources in rural areas across Africa reveal that there is no one particular framework that can be used to understand the complexities involved. Each of the frameworks has weaknesses, largely arising from a disregard of the influence of history, actors' trait of agency, or the role of natural resources in local livelihoods. As shown by Ribot and Peluso (2003) notions of access and institutional arrangements at the local level are complex and dynamic and cannot be captured using rigid concepts like property rights which are proposed in the understanding of resource governance. At best, arrangements are a *bricolage* (Cleaver, 2012). To understand natural resource governance in the African context requires a framework that imbues elements of dynamism, history, interaction and a broader understanding of access as a complex process. Empirical evidence will be used to test some of the theories engaged with above and build on them to propose a framework that is better suited to explain the interaction of customary and statutory forms of natural resource governance in the African context.

CHAPTER 3: RESEARCH APPROACH, METHODOLOGY AND METHODS

This chapter presents the research approach, methodology and methods that were employed. After Kershaw and Nicholson (2011), methodology is a systematic way to solve a research problem, while methods are the tools used to gather requisite data. Ethical and protocol issues that were followed as part of the research process are also presented. Annexes describing the tools used to collect data are presented at the end of this thesis.

The field work was undertaken from February 2011 to November 2012. During this time, I spent one month resident in the study site. Follow up interviews with key informants and a market survey were conducted in 2013. When doing field work in Jinga I stayed with my parents; in Nyanyadzi I rented a room from a local family.

To fully understand complex governance and livelihood issues, I used a combination of qualitative and quantitative methods. The use of both has been advocated in social studies of the type undertaken in this thesis in order to improve scientific rigour (Brannen, 1992; Sithole *et al*., 2002; Marshall & Rossman, 2006). The research also built on earlier research (1993 and 1997/1998) that I did as part of a multi-disciplinary research project (Hot Springs Report, 1995; Mukamuri & Kozanayi, 1999). Analysis of the qualitative data was informed by grounded theory. Grounded theory has been used widely in social studies. Data generates theory, as opposed to theory or other analytical constructs informing how data is generated (Corbin & Strauss, 1990; Glaser, 1992). Data coding and reflection on emerging threads for example through keeping an up to date diary of events is paramount when using the grounded theory. This gives objectivity to the researcher as he has to remove prejudices he may have about the issue under study. For me, doing research in an area in which I grew up, I found ground theory as a good tool to carry out my field work.

3.1 Case study approach

To get a deeper understanding of the issues, a case study approach was adopted. Detailed site-specific case studies have been found to provide greater insights into the governance of commercialised natural products (Yin, 1994; Wickens, 1991; Marshall *et al*., 2003; Basurto & Ostrom, 2009). The use of the case study approach to study non timber forest products

(NTFPs) and their governance is gaining popularity, with studies to date having focused on marula in South Africa and Namibia (Wynberg *et al*., 2002; Wynberg & Laird, 2007), devil's claw (Wynberg, 2004), mopane worms (Gondo *et al*., 2010), and illala palm (Sola, 2004). Despite its strengths, the case study approach faces limitations because it can be difficult to generalise results from one case study to another area due to differences in contexts.

3.2 Qualitative methods

Qualitative methods included a number of Participatory Rural Appraisal (PRA) approaches. Although PRA methods were originally used as development planning tools, they have gained prominence in the social sciences (Namarundwe & Richards, 2002). The use of PRA has been hailed for ensuring the active participation of even semi-literate and illiterate people in a research process (Chambers, 1983). Although Zimbabwe has one of the highest literacy levels in sub-Saharan Africa[18], in rural areas it is common to find a sizeable number of illiterate people, especially among older populations (CSO, 2012).

3.2.1 Focus group discussion

To get an initial overview of the issues, community meetings were held, followed by more focused discussions in interest-based groups (see Annex 2). Timelines, institutional mapping, resource maps, and ranking were developed and carried out in these focus groups. Some of the issues discussed in the groups were later followed up with key informant interviews. A checklist of questions prepared beforehand was used to guide the focus group discussions. The choice of semi-structured rather than structured interviews offered flexibility when conducting interviews.

The focus group interactions allowed group members to challenge, support, clarify, and discuss their views, providing a rich source of information. One disadvantage was that in some cases, the views of newcomers were discounted by the locals because they were considered not to know the history of the area. As a result, some people kept quiet during discussions. Frequently in such encounters, the voices of those who have long been resident in the area prevail over the opinions of newcomers (Ochs & Capps, 2002; Weinberg, 2002).

[18] Over 90% of the population is literate (CSO, 2012).

As aptly noted by Adichie (2009), this gives rise to calls of the "dangers of a single story" where one view overrides others. As a pragmatic and methodological solution to the problem that men tend to be domineering in public discussions, men and women were separated during community meetings in order to get the views of the two groups (Sithole, 2000). Soliciting the views of the non-dominant community members provided different views to those of the dominant groups.

In addition, participants who did not actively participate during group discussions were targeted with follow-up interviews. This was in accordance with recommendations by MacLure *et al*., (2010) who submit that the silence of subordinate people agitates the researcher and requires a deliberation of the meanings imbued in the silence. Follow-up interviews were organised with the silent informants, yielding insightful information especially regarding the inequalities in access to natural products between newcomers and locals.

3.2.2 Key informant interviews

At the local level, baobab product harvesters, craft weavers, traders, Ward Environmental Management Committee members, Ward Councillors, traditional leaders, and those who had been arrested for violating local rules were interviewed as key informants (see Annex 1). Process movers were also identified and interviewed[19].

Staff from the Department of Agricultural Extension and Technical Services (Agritex) were interviewed as they help to manage the environment through their responsibility for crop production. Representatives from institutions at district, provincial, and national levels that are directly responsible for managing natural resources were interviewed to get an impression of policy issues. To get insight into the state's efforts to promote customary practices, the District Officer for Culture in the Ministry of Education and Culture was interviewed. At the national level, staff from the Reserve Bank of Zimbabwe, and buyers of baobab products provided useful information on the baobab value chain.

[19]The concept of process movers is used in community based conservation and development projects. It refers to leaders who are at the forefront of initiating development (Meffe *et al,* 2002).

3.2.3 Resource maps

Resource maps were drawn separately by men and by women to show the distribution of natural resources such as baobabs, and complementary trees such as *Berchemia* spp and *Acacia* spp from which dye is extracted. The maps were developed into tenure maps that showed the ownership of baobab trees located in the study site. The resource and tenure maps later helped in the sampling of trees for the ecological survey. Tenure maps have been known to provide useful information that can be used for ecological surveys (Nemarundwe & Richards, 2002).

3.2.4 Timelines

Timelines were used to show temporal trends in the use, rules, and actors involved in using baobab products. The year 1980 – the year of Zimbabwe's independence – was used as a benchmark as most people remembered it clearly. Ten-year time periods were used to analyse the changes. Each decade was characterized by a phenomenon that most informants were familiar with i.e., 1980-1990 (*makore erusununguko* – independence); 1990-2000 (the period when the country adopted the World Bank supported Economic Structural Adjustment Program); 2000-2010 (*Hondo yemindanema Bearer cheques* – land reform and use of bearer cheques[20]); and 2010 onwards (*makore ema USA* – years when the country started using the US dollar as a currency of trade). The year 2022 (ten years after the survey was carried out) was used to depict the future. Information gathered from timelines was further corroborated with oral testimonies taken from elderly people in the study site. This was done to remove an inherent weakness of timelines which arises from informants providing inaccurate accounts or distorting them for ulterior motives (Nemarundwe & Richards, 2002).

3.2.5 *Oral histories*

Oral histories were used as a basis for understanding historical trends in natural resource use in the study area. They showed changes in resource use and critical decision-making paths over time. Related to this was the documentation of songs, folklore, idioms, and proverbs

[20]Due to hyperinflation in Zimbabwe from the mid-2000s, the country started to use high denomination bearer cheques which had expiry dates instead of the normal currency. The highest denomination ever used this time was a $100 trillion note.

that relate to the baobab-human nexus, to capture cultural practices and values related to baobab use and management. A key feature of the Shona people of which the Ndaus and Garwes are subsets is the figurative use of language and folklore (Nemarundwe, 2000). People who are deemed knowledgeable about the area, and about the history of settlement and the use of baobab products, were interviewed to generate case histories. This included headmen, village heads and their aides (*makota*), and village elders. A noted limitation was that informants could deliberately or unintentionally distort historical facts. Triangulation of stories with other methods, such as the review of historical records at the National Archives, was carried out to address this potential problem.

3.2.6 Institutional mapping

To understand the institutions[21] that are involved in regulating use of baobab products, Venn diagrams were used. Circles were used to depict the perceived influence of the different institutions. The bigger the circle, the more influential the institution. The nature of the relationships between institutions was shown by the closeness and degree of overlap of the circles. The Venn diagrams gave a visual impression of the relationship between institutions responsible for the governance of natural resources in the study site.

3.2.7 Ranking and scoring

A process of scoring was carried out in order to determine informants' perceptions about the relative importance of different livelihood options and natural resources. Scoring enables natural resource evaluation and encourages informants to make choices and then evaluate them (Hot Springs Report, 1995; Nemarundwe & Richards, 2002). Counters (stones) were used to depict the perceived relative importance of each of the variables under study (Tables 16, 17, 18, and 19). The stones were placed against each variable after group members had reached consensus on their relative weight. Reasons given for the weighting pattern were captured. After scoring, the variables were ranked according to the weight attributed to each one. For scoring and ranking, mixed groups of men and women were used. This was informed

[21] Institutions denote stakeholders or bodies that regulate access as opposed to institutional arrangements which are the rules of the game (after Uphoff, 1986).

by the observation of Nemarundwe and Richards (2002) that mixed groups usually result in more informed relative ordering.

3.2.8 Participant observation

Participant observation was used to understand people's lives and circumstances first hand (Weinberg, 2002). Having grown up in the area, I was also able to draw on insights from my own knowledge of the study site[22]. Participant observation can prove to be more reliable than interviews as informants can leave out sensitive information during discussions. In my case, because I had first-hand experience and knowledge of the study site, I knew things that were important for the study that were regarded as the dullest of platitudes to informants. Some informants treated some of their practices as mundane and therefore did not bother to report on them – "*iwe hauzvizivi here zvatagaratichiita* (surely you know about this common practice, you are from around)."

Time in the forest was spent with resource harvesters, observing their harvesting trends and preferences for fruits and fibre, the main baobab products. I also attended traditional village courts (*dare*), funerals, social gatherings, environmental and agriculture subcommittee meetings, and meetings of the full Chimanimani District Council, in order to appreciate how baobab-related issues were articulated in those arenas. Impromptu spaces such as barbeque venues at shopping centres also yielded very useful information, especially regarding illegal activities like the harvesting of bark from trees in sacred areas. It was at these informal gatherings that I learned a good deal about the leadership feuds among the Gudyanga family. Earlier attempts to engage concerned parties about the issue had yielded very little information.

Yet some of these practices were shrouded in secrecy, only known to those in the business of harvesting and selling baobab products like fibre. As remarked Mr. J - a renowned bark harvester from Nyanyadzi, "you might be familiar with this area but when it comes to the finer details of how we do our trade, we will have to explain things to you. You are like a learned medical doctor who has to ask his uneducated patient about the illness in order to

[22] Participant observation is a term used to refer to a situation where the researcher is also a participant in the process under study Sadomba, (2008).

come up with the correct prescription". Being referred to as an "outsider" by some informants because I now spend most of my time in Harare, was a constant reminder for me to view things through my researcher lens in order to remain objective. As argued by Pollner and Emerson (1988), even though the researcher is enmeshed in the local matrix of meanings of the researched, a 'tap" on the back will always remind the researcher that s/he is an outsider who has to learn from the locals!

3.2.9 Documentary evidence

Documentary evidence served as a method of cross triangulating information gathered from interviews and observations. Grey literature was also reviewed to get a historical overview of governance issues in Zimbabwe. Official and unofficial documents and records pertaining to governance systems in Zimbabwe and baobab use were analysed. Such documents included letters, memoranda, agendas, study reports, or any items that could add to the data base (Tellis, 1997). In this study, most of the above were relevant and available, since some work had already been done in the area on the ecology (Moyo, 1995; Mudavanhu, 1998), marketing (Hot Springs working group, 1995; Kwaramba, 1995; Mutasa, 2008), and institutional arrangements for bark products (Mukamuri & Kozanayi, 1999; Chibisa & Rwizi, 2009).

Chimanimani was one of the first districts of present day Zimbabwe to be settled by whites and the history of the area is well documented (Latham, 1966; Sinclair, 1971; Meredith, 1976; Mapira, 2006; MacGonagle, 2007; Perman, 2008). Newspaper clippings were also collected, mainly from the provincial tabloid, Manica Post, in order to get insights into how the media reported on the baobab value chain. The National Archives of Zimbabwe and the Mutare Museum also had significant collections of documents on the history of the study sites. Another important source of data was levy and fines records at the Chimanimani District Council. These records provided insights into how compliant residents were with the state's tax regimes and other regulatory frameworks.

For the purpose of the study a review of policy documents, Acts of Parliament, political party manifestoes, and pronouncements by politicians, especially in newspapers was carried out. In Zimbabwe, it is characteristic for political leaders to announce policy statements in newspapers before they are officially gazetted (Sithole *et al*., 2001). It was important for the

research to monitor national policy and opinion on the relevant issues, since national institutions have an influence at local level.

3.2.10 Snowball sampling

Informants involved in illegal activities such as the harvesting of baobab fibre in sacred areas, were understandably reluctant to discuss their operations with me. Locating these informants was a challenge, yet they provided valuable insights into how local customary practices had broken down. In this case the snowball sampling method was used. Snowball sampling (Biernacki & Waldorf, 1981), also known as chain referral sampling or rhizome sampling (Stehlik, 1999), is used to reach informants whose formal or informal network connections make them elusive. The key was to identify the gatekeepers of the trade[23]. These gatekeepers were able to identify key members of their group who could help to identify other members. Members of a secret group felt confident to discuss their trade with me if I had been referred by a fellow group member. The snowball method was also used to identify key informants. For example, one cross border craft trader gave me contact numbers for other cross border traders, and I was able to interview one of these members.

3.3 Quantitative methods

Household and ecological surveys were carried out using quantitative methods. Enumerators helped to administer both surveys.

3.3.1 Household surveys

A household questionnaire survey (Annex 9) was administered to capture the quantities of products harvested by household members. The survey followed the group meetings. The profiles of various resource users were also captured in the survey, as well as resource users' knowledge of and adherence to customary systems.

[23] These are people who occupy important positions within qualitative social work research and their engagement with research is crucial to the ongoing development of a useable knowledge base (Clark, 2010). Like gate keepers in real life, these knowledge gate keepers can decide who has or does not have access to local informers.

The selection of villages for the survey in Nyanyadzi and Gudyanga wards was done on the basis of the level of baobab activity and the accessibility of the villages. A community meeting with local residents helped rank the villages in terms of the level of baobab harvesting activities.

The village of Jinga was chosen for two reasons: first, to build on earlier work done in the area in 1993/94 and 1997/98; and second because of the conspicuous absence of the commercial use of baobab despite there being many baobab trees in the area.

3.3.2 Sampling of households

Three hundred and thirty-six households were sampled for the survey, using stratified random sampling. The village heads' (*masabhuku* – the book keepers) household registers were used. However, the registers had some names that did not qualify to be proper households. These were households created for the purpose of receiving free handouts from the government or from humanitarian organisations. Such people included newly married couples still staying with the groom's parents and single mothers still staying with their parents. Both types not only get most of their provisions from their parents, but also pool their efforts into the parents' portfolio of livelihoods options. Thus, the "Christian Care village registers"[24] had to be reviewed before identifying names for the household survey.

Reviewing the registers was done by going through them with village elders who knew the households in each particular village. A household is generally defined as people who cook and eat under the same roof and pool their resources for the benefit of all members. According to local custom, a couple qualifies as an independent household if the couple:

has observed the ritual of *kubikiswa* (performed by an aunt of the husband to officially wean the couple into an independent household); and is paying head tax to the government, has been allocated their own residential place by the village head, and has brewed beer (*doro rechiutsi*) to signal that they are now entitled to start their own cooking fire.

[24] Most village registers and some of the emerging village heads are colloquially termed Christian Care registers or village heads to denote that they are created solely for purposes of accessing free handouts from this NGO. Christian Care is one of the NGOs that distribute free food hand outs in the study area.

I used the customary definition of household and disregarded anyone who did not meet the above criteria. Cavendish (1997) used a similar approach in a household survey in south eastern Zimbabwe. This definition resonates well with that used in most livelihood surveys (Ellis, 1998a; Campbell *et al.*, 2001).

The formula by Krejcie and Morgan, (1970) was used to determine sample size. A total of 336 households was sampled for this survey.

$$n = \frac{N * Z^2 * P(1-P)}{[d^2 * (N-1)] + [Z^2 * P(1-P)}$$

Where n = sample size; N = Total population size; d = Precision level (margin of error); Z = Number of standard deviation units of the sampling distribution corresponding to the desired confidence level; and P = Population proportion.

When considering the size of the representative sample, the level of precision was also taken into consideration. The standard for precision level (d) and the standard deviation units (Z) desired are 5% and 1.96 respectively. The precision level corresponds to the margin of error of the results while the standard deviation corresponds to a 95% confidence level. The population proportion should be set at 0.5.

Household names were recorded in a random manner before sampling. The systematic random sampling method was used with households selected from each of the villages in proportion to the total number of households. A household was randomly picked near the top of the list, and then every X^{th} name was selected after that – X being the 3^{rd}, 5^{th}, 9^{th}, or whatever number was needed to get the correct sample size. Table 1 shows the sample size from each of the selected villages.

Table 1: Number of sampled households

Village Name	Village No	Sample	Population
Jinga	1	118	1322
Gudyanga	2	13	122
Dirikwe	3	54	509
Masasi	4	22	207
Nechikwira	5	14	132
Chishakwe	6	7	66
Makotamo	7	12	113
Muzviziyi	8	38	358
Ngaazwane	9	18	170
Muchandinesa	10	27	254
Mutsiyo	11	13	122
Total		**336**	**3164**

Source: Field data and village registers

At household level, the target was the household head because s/he would be knowledgeable about the activities of the household. However, if the household head or spouse was away, any member of the household who was over 18 years of age was eligible to be a respondent. To answer some of the questions that required recall - for example, the amount of products harvested during the previous year - the respondent could ask other members of the household to assist.

3.3.3 Stratification of wealth classes

The stratification of households into wealth classes is usually done as part of the analysis of household data gathered in conventional surveys (Scoones, 1995). Households were stratified into wealth classes using the quantitative method of principle component analysis (Campbell *et al.*, 2002b). To create wealth classes I considered ownership of such assets as livestock, income from formal and informal employment, as well as the type of house owned. Access to a plot in the irrigation scheme was also considered. Ownership of such a plot guarantees food security for a household, as well as providing surplus produce that can be sold to generate income. The inclusion of these variables in allocating households to specific wealth classes is informed by the fact that the rural economy is based on access to a range of assets and

resources, unlike the urban economy which is usually based on income from formal economic activity. According to Scoones (2009), the rural economy is made up of many aspects – it is a *bricolage*.[25]

A separate wealth ranking was done through a qualitative method in group meetings by local residents. Variables considered for differentiating the households included ownership of livestock, employment status, and type of houses (Annex 6). Wealth ranking provides an accurate indicator of relative wealth among community members (Scoones, 1995).

3.3.4 *Market survey*

A market survey was carried out along a section of highway to get a deeper understanding of the typology of people involved in selling baobab products at the roadside. A total of 37 traders selling crafts and fruits along the Mutare-Birchenough Bridge highway between the Rufaro Business Centre in Nyanyadzi and Changadzi River (the southern boundary of Gudyanga) were interviewed in June 2013. June is the peak of the market for fruit and fibre products as all agricultural activities are over by this time, except for people with plots in the irrigation schemes. A checklist of questions was used for this interview (Annex 5). The results were analysed using Statistical Package for Social Sciences (SPSS).

3.4 Ecological survey

To assess the level and pattern of bark and fruit harvesting from trees under different property rights regimes, an ecological survey was done. The tree tenure survey was carried out from April to May 2011. Samples were randomly chosen from a list of identified tenure systems. Transects were 0.5 km long, perpendicular to the main highway that passes through the study site. Harvesters of baobab products participated in the initial phase of the survey. Their main role was to indicate the different dates on which trees were harvested so that estimates could be made of the age of a bark scar.

[25] French term which means "making do with whatever is available" and denotes the multiplicity of livelihood options adopted by local people. A distinction is made between economic and institutional bricolage (Section 2.5.4, page 31) in that the former means various economic activities pursed while the later relates to the gamut of local resource sharing arrangements instituted by actors to resolve local governance challenges (Cleaver, 2012)

The frequency of debarking, the extent of debarking (for example rings around and up the tree), the impact of debarking on the trees, and the capacity of the trees to produce fruit were measured. Tree physiology in terms of girth and height was also measured (Annexes 3 and 4). The occurrence of black soot disease was understood to indicate that the affected tree had been stressed due to the overharvesting of bark which predisposed it to infection. Specific details on how the different measurements were done are given below.

3.4.1 Fruit count and other variables

Fruit and bark are the two main consumable products of the baobab tree that are harvested for domestic and commercial use. Fruit count was estimated to the nearest 10th. Fruits on the tree as well as those on the ground were counted. Fruit counting was done at a time when harvesting was just starting.

A health index and the impact of harvesting were measured using a visual assessment. A score, based on pre-determined classes, was allocated for each variable. Table 2 gives a justification for the selection of the different parameters.

Table 2: Codes for ecological tree survey

Indicator	Scale	Justification
Index of health	1. Good – no black soot diseases 2. Poor – early signs of black soot 3. Very poor – the whole tree has black soot disease	Black soot is an indication of excessive stress partly attributable to extensive debarking[26] Diseased trees do not produce usable fibre and eventually such trees may die
Ability to provide fibre	1. Good – provides good quality, first-cut fibre (*mutangur*o) 2. Poor – second--cut fibre (*mupindwa*) 3. Tree cannot be used for fibre for example diseased, hollow or rugged surface.	Bark fibre is an important product used in craft production, therefore its availability sustains the craft industry Heavily debarked trees produce second-cut fibre which makes inferior crafts
Impact of harvesting on stem and branches	1. Nil – not debarked at all 2. Mild – not debarked all round 3. Severe – debarked all around 4. Very severe – debarked more than one rung	Debarked portions require two years healing time Severely debarked trees can potentially succumb to black soot disease Intensity of debarking is an indication of serious break down of local institutions.
Property rights	1. Privately owned – at and around homesteads 2. Sacred sites – sites for graveyards, rituals, and worshipping 3. Communally owned – crop fields, grazing areas, mountains, and forests 4. State – along main road, college, Zimbabwe Republic Police Camp	Tenure defines access Sacred sites are worth studying on account of the centrality of sacredness in the belief systems and natural resource management systems of the people in the study areas. Additionally, this tenure system merits investigation on account of the fact that it can be proxy for the effectiveness of customary systems.

[26] To assess tree health, the occurrence of black soot disease was considered as an indication that the affected tree had succumbed to stress for example, from debarking or drought (Piearce *et al,* 1994).

3.4.2 Tree height and circumference

The circumference of each tree was measured at Breast Height (DBH) (1.3m) using a 50m tape. The height of each tree was estimated to the closest 1m using a graduated 14m pole. For baobabs that were more than 14m tall, the heights were visually estimated. This method of measuring has been used in similar situations (Mpofu *et al*., 2012).

3.4.3 Number of trees sampled by tenure

A total of 245 trees (Table 3) were surveyed, of which 23.3% were from Jinga and 76.7% were from the Nyanyadzi cluster. In terms of tenure, the bulk of the trees were from privately-owned land (40.8%), followed by communal areas (35.1%), and 24.1% were from state owned land, while only two trees were found in sacred areas. The number of sacred trees was numerically insignificant and they were therefore disregarded in the tenurial analysis.

Table 3: Number of surveyed trees by tenure

Tenure type	**No. of sampled trees**	**%**
Private	100	40.8
Communal	86	35.1
State	59	24.1
Sacred	2	(left out of analysis)
Total	**245**	**100**

Source: Field data

3.5 Analysis of quantitative and ecological data

3.5.1 ANOVA

For all variables of sustainability, mean values and their standard deviations were calculated (see Tables 3 and 4). In order to test for differences in tree height, DBH, number of fruits, number of harvests, area harvested, and years since the last harvest, one-way analysis of variance (ANOVA) was performed. Tukey´s post-hoc tests were computed to determine specific characteristics of each tenure system and how these different tenure systems compared with one another. A similar process was done for Jinga village and the Nyanyadzi clusters to ascertain cross-site differences. Transformations were used where necessary in order to improve normality of error and homogeneity of variance. Normality of error was checked graphically and homogeneity of variance was checked both graphically and using a

Levene test. Statistical analyses were carried out using Statistica (Statistica 7, Stat Soft Inc., Tulsa, USA).

T-test

Unpaired T-tests were used to determine the effect of a cluster (village) on tree characteristics (height, DBH, and black soot disease). Differences between Jinga village and Nyanyadzi clusters were assessed using student T-tests.

Chi² test

To test the relationship between the type of land tenure and use pattern across the Jinga village and Nyanyadzi clusters, a Chi² test was carried out with Statistica (Statistica 7, Stat Soft Inc., Tulsa, USA). Additionally, the corrected contingency coefficient (Ccorr) was calculated after Köhler *et al*. (2007) as an estimate for the strength of the relationship:

$$C\ corr = \sqrt{\frac{\chi^2 \times m}{(\chi^2 + N)(m-1)}}$$

Ccorr = weighted measure for the strength of the relationship between parameter A and B

X^2 = unweighted measure for the strength of the relationship between parameter A and B

m = number of categories in the parameter with less categories

N = sample size (total)

The coefficient ranges from 0.0 to 1.0 (i.e., no to maximum relationship between the two factors).

X^2 also measures the strength of the relationship between the two parameters but it is unweighted, i.e., its maximum value depends on the sample size and group distributions. Therefore, one cannot say how strong the relationship is by looking at the X^2 value only, or by

comparing different test results (for example the effect of tenureship on the impact on stems and branches, respectively). In contrast, Ccorr can be compared between different analyses and works in a way that is similar to a percentage value (for example, 0.8 being equivalent to an 80% relationship between tenure and the impact on the stems). An assessment of the impact of harvesting on stems, branches, and fibre provision, as well as tree health within the three land tenure systems, was carried out using a Chi^2 analysis.

Spearman's rank correlation coefficient was used to identify whether two variables relate in a monotonic function (that is an increase in one variable results in a decrease in another, or vice-versa). Examples included the number of bark harvests and the impact of this on branches.

3.5.2 Analysis of data from the household and market questionnaires

Household survey data was captured in Microsoft Access and analysed using Statistical Package for Social Sciences (SPSS) version 16. T tests for comparisons between two sites and groups were done.

3.5.3 Analysis of qualitative data

Data analysis involves a search for patterns in data-recurrent behaviours, objects, or a body of knowledge. Once a pattern is identified, it is interpreted in terms of social theory or the setting in which it occurs (Neumann, 1997). A body of data, especially from qualitative research, was gathered in this study and needed careful analysis.

For qualitative data, matrices, tabulation of frequencies, temporal schemes, and mind maps were used to initiate the analysis and draw out common themes. The research used a grounded theory approach to build up a theoretical framework of baobab governance based on findings emerging from the data. Data analysis itself started with data coding. Codes are tags or labels for assigning meaning to the descriptive or inferential information compiled during a study. Coding entailed organising data into categories on the basis of themes, concepts, or shared features.

3.6 Community entry and observing protocol

"To the Jews I became a Jew, in order to win Jews. To those under the law I became like one under the law (though I myself not under the law), so as to win those under the law" – 1 Corinthians 9:20

3.6.1 Seeking approval

Although I originate from the study area, getting accepted by the community was not automatic. Certain protocols had to be observed to meet the expectations of the traditional leadership and political authorities.

For the traditional system, the protocol entailed presenting my proposal to a council of traditional leaders in both Nyanyadzi and Jinga. In Nyanyadzi, at the end of the introductory deliberations, headman K motivated that my study be supported, "*Saka vanaMutape, mwana arikuti taurirai varidzivenzvimbo kuti abate imbwadzawo kutimwanaaone kuhambe chakanaka mubasa rake*" (so, village heads, supplicate for the spirits of the land so that they do not lead the researcher in harm's way). A "research permit" fee in the form of groceries was paid to the headmen. Even after being granted permission to do field work from the traditional leaders I was still expected to pay homage to the village heads. This involved doing the rhythmic clapping of hands (*kukwidzemaoko kudare*) as per tradition before giving them updates on my field work.

With government, approval to carry out research was first sought at the Chimanimani Rural District Council (CRDC) and then at ward level. In addition, in view of the political upheaval that had taken place in the country in 2008, the security forces had to be kept informed of field research activities. Upon notifying the police at Nyanyadzi that I had verbal permission from the CRDC as the responsible authority for the district to carry out my research, I was advised that I had to go back to the CRDC and get a stamped letter of authorisation. Even after lodging a copy of my proposal, the permit from the CRDC, and an official letter from the University of Cape Town (see Annexes 7 and 8) at the Nyanyadzi police station, personnel from the Police Internal Security Intelligence (PISI) would not allow me to go ahead with the

research before submitting the same documents to them. PISI is an arm of the police force and is also stationed at the Nyanyadzi Police station.

Throughout the research process, the security police notified all key stakeholders, including politicians, of any fieldwork activity well in advance. Despite my strict adherence to the required protocol, PISI remained mistrustful. On one occasion I was asked by a security officer about the significance of an open palm (symbol for the opposition Movement for Democratic Change) on the logo on my letter from the Environmental Evaluation Unit at the University of Cape Town!

3.6.2 Selection of enumerators

A total of five enumerators were selected to administer the household questionnaire and take ecological measurements. All had attained at least four years of secondary school education. The case for the involvement of local people as co-researchers in environmental research has long been advocated by some scholars (e.g. Sithole, 2000; Gearheard & Shirley, 2007; Garnett *et al*., 2009). *Inter alia*, the involvement of locals as paid core researchers ensures knowledge transfer, an increased likelihood that recommendations will be adopted, and is an investment in local intellectual property (Garnett *et al*., 2009).

In Nyanyadzi, all the enumerators were once active craft makers and therefore were conversant with some of the baobab activities under study. Additionally, one of the field assistants had participated in previous baobab research surveys carried out in the area. This prior knowledge about the value chain proved useful as the enumerators were quick to comprehend the contents of the survey. In Jinga, both enumerators were men, one of them a grandson of the village head and the other a trainee primary school teacher who was the son of a retired school head teacher. The involvement of enumerators from such respected households in Jinga resulted in positive responses from informants, while in Nyanyadzi the enumerators used their experience in the baobab value chains to clarify issues in the questionnaire.

3.6.3 Ethics and feedback

The research project applied the Code of Ethics of the International Society of Ethnobiology (ISE), 2006 (http://ise.arts.ubc.ca/global_coalition/ethics.php, accessed 23rd June 2009). This code recognises the importance of traditional and customary laws, protocols, and methodologies within communities where collaborative research is proposed. This is in line with the philosophy of PRA techniques proposed for data collection.

The field work was also guided by ethical processes required by the University of Cape Town, which, like the ISE, require the researcher to respect local traditions and seek consent from the informants before collecting any data. Prior consent had to be sought from the informants before any photographs were taken. The purpose of the study was explained to informants, first at community meetings as part of the entry process, and second before each discussion or interview. Informants were also guaranteed the confidentiality of their responses and identity.

With prior consent of informants, a tape recorder was used to record discussions. Use of a tape recorder ensured the smooth flow of discussions because it did not interrupt either the researcher or the respondent. The tape recorder was used in instances when interviews were conducted and writing notes was impossible, for example when walking in the forest. Some researchers (e.g. Kohn, 1997; Tellis, 1997) have used tape recorders successfully where respondents had to give detailed accounts of events or an expression of their views and feelings. Otherwise, discussions were captured verbatim in order to correctly capture the words and emotions of the informants.

I attended meetings of the environmental and agricultural subcommittee meetings in Chimanimani in order to give feedback on my study. Routine feedback was also given to relevant government offices at Chimanimani District, notably the FC, EMA, and RDC natural resources. At the local level, traditional leaders, ward councillors, the police, and resource harvesters were always appraised of my research activities.

Feedback or recap meetings to validate collected data were carried out before the next episode of field activity[27].

3.7 Limitations and challenges faced during field work

At the time of the fieldwork, there was a leadership feud in Nyanyadzi, and there were accusations and counter-accusations about witchcraft within the ruling Gudyanga clan. This affected my research in that there were times when I could not bring local leaders together for group discussions. At the beginning of the fieldwork there was also a lot of censure by the local police.

In Jinga, the challenge was that of recent newcomers (*vanhuvekuuya*) having their contributions at group meetings being discounted by the locals (*agariemuno*) who claimed that the former could not talk with authority about governance issues in the area due to their lack of historical depth.

District level officials were reluctant to open up during discussions especially when issues involved politicians for fear of reprisals and victimization. I always reminded myself, "*UrimuGarwe iwewe, unozviziya zvinoitikamuno*" – you are from the Garwe people so you know how sensitive it is to discuss these things. Therefore, officials became "reluctant respondents" for fear of reprisals by the government. This was consistent with what Gokah (2006) observed in sub-Saharan Africa, that policy officers shy away from policy issues for fear of political repercussions, and of being labelled as anti-government. I circumvented this problem by engaging with the officials individually outside their offices.

A problem that arose from doing research in a community that I grew up in is what Neumann (1997) called social desirability bias. Neumann noted that respondents can experience social pressure (that is being a neighbour's research subject), and may end up over-reporting or under-reporting the true situation as they try to present a positive image of themselves. To

[27] In Nyanyadzi, one village head used information from the National Archives I shared with him about the genealogy of the ruling family to build a case to be installed as the next headman after the death of the incumbent headman in the area. This adversely affected my research as other village heads' view was that I was getting entangled in the local leadership feud and taking sides. So, I had to share the same information with the rest of the village heads in order to ensure transparency.

deal with this problem, I spent time explaining the purpose of the research programme, and that I had carried out research on baobab products earlier on (1993 and 1998/1999).

New evidence on research methodologies questions Neumann's notion of social desirability pressure. According to Monahan and Fisher (2010: 357), informants' performances, whether "staged or self-censored for, or influenced by the observer, often reveal profound truths about social and/or cultural phenomena". Being an insider in the research has advantages (Unluer, 2012) can be capitalized on. In my case, due to the tense political situation at the time of the field work, I drew on my social capital. For example, I share the same totem (*Moyo*-heart) with the Gumbu of Nyanyadzi so they considered me to be one of their family members and it allayed any fear they had about my studies[28]. Further, as someone who grew up in the study site, I was able to understand local metaphors and nuances, so I did not lose the meaning of responses from informants. I also knew how to ask sensitive questions without being offensive.

As for me, having grown up in the area, the likelihood of being judgmental rather than objective was high. As aptly captured by Mamdani (1999: 859), "my origin would betray my views". Remaining objective while doing field work was at times a challenge, especially in Jinga village due to my familiarity with the informants and the local context. First, even though I had been working in Harare for 20 years, I grew up in the area so I had some knowledge, perceptions, and biases about some of the things I was researching. Second, I had worked for the Southern Africa For Indigenous Resources (SAFIRE), an NGO that had provided leadership capacity training for some of the local traditional leaders. I had also interacted with district and national level policy makers in previous deliberations on governance and natural resource governance. For example, I had written and presented a policy brief on the "Commercialization of Non Timber Forest Products" to legislators from the Environment and

[28]For example, headman K used his own car to attend most of my meetings with traditional leaders in order to support another of the Gumbu member. That local people were ready to support me was consistent with Borkert and De Tona's (2006) work that informants are usually more willing to share information with someone they readily identify with.

Natural Resources portfolio[29]. From these experiences, I had generated my own views from development work.

To deal with these challenges, I spent long periods living among respondents in order to gain their trust. In addition, I used the concept of reflexivity (Ahern, 1999) as a quality control measure in qualitative research (Berger, 2013). It entails a critical reflection on the researcher's own position and views and how this affects his or her interpretation of the research results (Berger, 2013). As part of the reflexive method, I kept a diary of daily plans and reflections on what happened. Any presuppositions I had before carrying out fieldwork were written down in advance. Feedback sessions with informants also helped to correct any biases I might have had. In addition, phases where I stepped out of field work to compile data helped me reflect more critically about the way I was carrying out my research. Lastly, using a theoretical framework to understand my findings helped me to construct and restructure views in a more detached manner.

3.8 Conclusion

This chapter has discussed the research methodology and methods that were used to generate data and interrogate the research problem. A case study approach was used in order to get an in-depth understanding of the issues being researched. Qualitative and quantitative methods were used to gather data. The choice of research methods was informed by the study objectives and its grounded theory approach. An analysis of historical records from the National Archives and newspapers, participant observations, and key informant interviews were other methods used to gather data. Key informants interviewed included users of the different baobab products, traditional and government leaders, and members of staff of NGOs working in the area (Annex 1).

Quantitative methods included an ecological survey to examine the relationship between different indicators of ecological sustainability and different tenure regimes. A total of 245 trees was examined. A detailed household survey to determine the socio-economic status of

[29]Presentations were made to the Natural Resources Portfolio Committee at the Meikles hotel and then at the Parliament of Zimbabwe. The then Member of Parliament from Chimanimani was part of the Portfolio Committee (SAFIRE, 2010).

the resource harvesters as well harvesters' knowledge and observations of both customary and statutory systems of governance, was also administered. A total of 336 household survey questionnaires was administered. The researcher also drew insights from his own experience after having grown up in the study area and having carried out research in the area more than a decade ago.

The use of multiple qualitative and quantitative research methods added rigor to the study. It also helped with interdisciplinary dimensions, given the focus on governance, livelihoods and ecology. Time spent in the field helped me understand nuances about the issues but what helped more were the reflection sessions I had away from the field. Taking breaks from field work enabled me to critically reflect on my research methodology and emerging results. Lastly, building good rapport with informants, drawing on my own social and totemic relations[30] resulted in informants actively participating in the study.

[30] Makamure and Vengesai (2015:9) Relations based on a mystical or ritual bond of unity within the group. The totem serves as the emblem of the family or clan. In prehistoric societies, totems were key symbols of religion and social cohesion; they were also important tools for cultural and educational transmission.

CHAPTER 4: NATURAL RESOURCE GOVERNANCE IN ZIMBABWE

This chapter provides an overview of the trajectory of natural resource management regimes in Zimbabwe, from precolonial times to the present day, highlighting the impact of statutory forms of governance on customary practices in the management of natural resources in communal areas. A review is provided of the use of customary practices in the management of natural resources during three identified time periods: pre-colonial, colonial, and post-colonial. National policies and programmes that have had a bearing on the use and management of natural resources are also discussed. This overview serves as a bedrock to understanding the interplay between customary and statutory forms of resource governance at the local level. By looking at nationwide governance processes, I locate the interaction of local practices and macro level processes to ascertain the overall effect on governance at the local level. I pick up on this debate in Chapter 7 where I use empirical evidence to show how the interplay between customary and statutory forms of governance has played out in the management of the baobab tree.

4.1 Historical overview of customary practices

A historical discussion of the interaction between traditional authorities (TAs) and the state in Zimbabwe is appropriate to understand the changing roles of customary practices in the governance of natural resources in communal areas. The interaction between the state and traditional authorities has a knock-on effect on customary practices over which the traditional authorities preside. Such customary practices have been used to manage natural resources since the pre-colonial period.

4.1.1 Pre-colonial period

Prior to colonial rule in Zimbabwe in 1890, villages and chiefdoms with clearly defined boundaries existed as political entities presided over by traditional authorities (Moyana, 1984). At the time, in the African cosmology, important natural resources were viewed as God-given and had no marketable value (Moyana, 1984). The prevailing land tenure system vested land rights in a community and superseded the rights of any individual. The chief served as a trustee who allocated land to newcomers and locals and ensured that these

allocations were in harmony with the traditional land tenure system (Moyana, 1984; Mawere, 2013). Other natural resources found on the land were shared communally, for the sustenance of life. It was the duty of every community member to manage the resources found on the land (Moyana, 1984).It was on this basis that traditional rules and customary practices on the governance of natural resources were framed. Traditional authorities as guardians of customary practices have remained part of the cultural heritage of the African people. The rootedness of traditional authorities in the pre-colonial past gives them legitimacy that is more readily recognised by local people than is modern state power (Dore, 2001; Gondo *et al.,* 2010; Mawere *et al.*, 2014).

A myriad of customary practices based on taboos, folklore, sacredness, and totemism were used to manage natural resources in pre-colonial times (Mawere, 2013). These practices have been passed on from generation to generation as part of the African cultural identity. Through the passage of time, due to the interaction with western conservation practices, such customary practices have changed. The arrival of whites in 1890 in Zimbabwe, and the subsequent establishment of the British colonial system of governance, marked the first phase in the reshaping of such practices.

4.1.2 Colonial period

The formalisation of traditional forms of governance started in earnest in 1923 when a Department of Native Affairs (DNA) was set up by the colonial government. The department specifically dealt with issues affecting Africans[31]. Notably, it became responsible for maintaining law and order among Africans, collecting taxes on behalf of the government, and recruiting rural Africans for labour in the emerging mining and farming economy (Chimuka, 2001).

The role of TAs as key elements in the execution of the role of the Department of Native Affairs created a fundamental paradigm shift in their role in the politics of the country. Henceforth, TAs had to serve two constituencies – the people they represented and the central colonial government. As will be shown later, that system which was established in the

[31] According to Mamdani (1996), this marked the genesis of indirect rule and creation of a dual system of rules governing Africans (subjects) and Europeans (citizens).

colonial period was abolished at independence in 1980 but was then adopted and resuscitated in 1998 through the enactment of the Traditional Leaders' Act (TLA) (Dore, 2001).

Conquest and integration of the TAs was not an easy feat for the colonial and later independent State. For example, during the 1960s when the nationalist uprising gained support and popularity, the then Rhodesian government had to court the support of traditional chiefs in order give the government some degree of legitimacy - locally, and in the international community (Weinrich, 1971). The same was noted in independent Zimbabwe, this being a demonstration of the indispensability of TAs. A summary of the regulations that were put in place by the colonial government and their motives is presented in Table 4 below.

Table 4. Summary of the development of the traditional leadership

Year	Development	Purpose
1898	The southern Rhodesia Native Regulations 18 of 1898 abolished the hereditary apportionment of chiefs. Instead, the District Administrator was empowered to appoint, demote or elect chiefs.	Henceforth, a chief held office at the pleasure of the Administrator and contingent upon "good behaviour" and general fitness (Nuesiri, 2014)[32].
1923	Establishment of the Department of Native Affairs	Collected taxes on behalf of the government, maintained law and order among the Africans. The Department of Native Affairs was organized on a territorial basis with chiefs presiding over huge areas in each Province run by the DNA. Even though Native Commissioners despised traditional leaders as unprogressive, they always administered the district after consulting the traditional leaders.
1931	Establishment of Native Boards	Dealt with the "restless Africans" by giving them a platform to air their views. The chiefs and headmen were made ex-officio members, while provision was also made for elected representatives.
1937	Establishment of Native Councils	Dealt with African issues, making a distinction between Europeans and African legal rights-citizens and subjects according to Mamdani (1996). Had more clearly defined roles but lacked enforcement capacity.
1941	Natural Resources Act	Empowered state authorities to make use of coercive conservation methods such as destocking of livestock and digging of contour ridges (*makandiwa*) in crop fields to arrest alleged rampant soil erosion. Restrictions on tree cutting were also imposed.[33]
1951	Native Land Husbandry Act[34]	Enforced state-based conservation practices on land owned by Africans.
1967	Tribal Trust Land Act	Replaced the Native Husbandry Act and transferred the role of land distribution from colonial district commissioners to traditional leaders.
1969	Land Tenure Act	Repealed the Land Apportionment Act (1931) Allowed Africans to buy and own land. This resulted in private ownership of land by indigenous people. The Forestry Commission still exercised oversight on the cutting down of trees on this private land.

[32]This was perpetuated after independence by the independent government through the enactment of the Headmen and Chiefs Act. The state's principle of electing traditional authorities was counter intuitive to the traditional way of electing leaders which was centred on lineage seniority e.g. Mutambara case (Latham, 1966).
[33]Forceful adoption of contour ridges later became a rallying point for the liberation war in the late 1970s to 1980. Nemarundwe *et al.* (1998), reported how some communities in Zimbabwe destroyed the contour ridges in their crop fields at independence in 1980 as part of obliterating colonial policies.
[34] The NRA (1941) and NLHA (1951) were promulgated in response to two commissions which were launched by the colonial state namely the Natural Resources Commission of 1938 and the Godlonton Commission of 1941 respectively. Both Commissions were necessitated by ecological concerns in the over-populated African communal lands (Chigwenya & Manatsa, 2007).

These pieces of legislation had the net effect of empowering and disempowering traditional authorities in a seesaw fashion. The Native Husbandry Act (NHA) and Tribal Trust Land Act were two important pieces of legislation that shaped natural resource management during the colonial period. The displacement of Africans as a result of these two laws and the expropriation of their land by the colonial government was the genesis of Africans losing control of, and access to, land, including sacred areas that were part of their cultural systems (Maradze, 2003). Nonetheless, after being sidelined by the infamous Native Land Husbandry Act of 1951, traditional leaders regained their political space to enforce customary practices in the use and management of natural resources in communal areas through the Tribal Trust Lands Act of 1967. This Act marked a watershed in the re-empowerment of traditional authority to allocate land and manage natural resources in communal areas.

The Forestry Commission, Natural Resources Board (NRB) (later renamed the Environmental Management Agency), and to a certain extent the Agricultural and Technical and Extension Services Department (Agritex), were mandated to oversee the management of natural resources in communal areas (Nyambara, 2001). In defiance of the repressive laws, local people embarked on activities of subversion, in the form of an unsanctioned harvesting of forest products or settling in undesignated areas.[35] On the other hand, white land owners enjoyed discretionary powers to manage natural resources on their farms. In sum, the colonial forest policy and laws were dualistic. The laws allowed for self- monitoring on white-owned lands aided by massive financial support and incentives in contrast to command and control by the state in communal areas (Mandondo, 2000).

4.1.3 Post-colonial legislative landscape

Zimbabwe gained its independence in 1980 after a protracted war of liberation against colonial authorities. Independence saw some colonial laws repealed, others amended, and new legislation was crafted and passed in line with the agenda and ideology of the nationalist government. The new nationalist government embarked on a programme to neutralise and dismantle the traditional authorities that had been used as part of the extension of the

[35] Scholarly views on the impacts of the Act differ with some, particularly Kwashirai (2006), and Nyambara (2001) reporting of rampant incidences of traditional leaders demanding bribes for land allocation.

colonial government (Ncube, 2011). Scholarly opinion suggests that the independent states inherited some of the colonial legislation that stifled traditional authorities in the governance of natural resources (Scoones & Matose 1993; Dore, 2001). This was part of a state strategy to perpetuate central government control over communal lands (Mamdani, 1996). As will be shown later, that co-option was not successful as traditional authorities used subtle ways to resist such practices.

One of the most important dimensions of rural development policy in Zimbabwe since independence has been local government reform, in particular the government's decentralisation policy in the mid-1990s (Mangiza, 1990). This resulted in the state superimposing elected local governance structures over traditional authorities. In 1984 the Prime Minister gave a directive to devolve power to democratically-elected lower tier structures with the intention of spearheading development and resource management planning at the grassroots level.[36] The Rural District Councils Act (1988), Communal Lands Act (1982), and the Communal Forestry Produce Act (1987) are some of the pieces of legislation that were passed in line with the decentralisation effort, and had profound impacts on the use of customary practices in the management of natural resources in communal areas. These Acts have had varied effect on the governance of natural resources and customary practices in particular. The Communal Lands Forest Produce Act criminalised commercial trading in natural resources and gave Rural District Councils powers (and usurped that power from traditional authorities) to protect important trees by gazetting them and being the authority over all natural resources in the district (Kozanayi *et al*., 2014).[37]

For eighteen years after independence, the government ignored and sidelined traditional authorities in the governance of communal areas. Traditional authorities were viewed as despotic and not democratic enough to articulate democratic development processes at grassroots level in line with the nationalist government's decentralisation model (Ncube,

[36]Such decentralisation efforts were not without challenges. For a scholarly critique of the decentralisation in Zimbabwe, see Murphree (1991) who observed that there was a tendency in bureaucratic hierarchies to seek power from levels above and a general reluctance to devolve such power to levels below. Conyers (2003), Murombedzi (1991) and Hughes (2001), averred that higher level actors appeared to decentralise service-type activities while abrogating to themselves fiscal and production-oriented activities. Lack of incentives to provide services by the elected officials was also noted as a challenge (Mandondo, 2000).

[37]The baobab tree is not a protected tree despite its important economic value and the threats of over harvesting.

2011). To that end, the Communal Lands Act, and the Rural District Council (RDC) Act were passed. Effectively, village heads were replaced by village development committees (VIDCOs), while headmen were replaced by Ward Development Committees (WADCOs) as provided for under the RDC Act. The above Acts replaced the Tribal Trust Lands Act of 1967 which had bestowed authority over communal lands on traditional leaders. Other supportive Acts that governed communal areas were enacted and are discussed below.

Communal Lands Act

The Communal Lands Act (1982), Chapter 20:04, which replaced the Tribal Trust Land Act (1967) had the effect of disempowering traditional leaders as it withdrew the land and resource-allocation powers vested in the chiefs by the colonial government. Instead, the Act vested control over land in the president and devolved its administration to RDCs. Rural District Councils therefore became *de jure* land authorities. The Act also empowered RDCs to create Village Development Committees and Ward Development Committees. The two institutions were intended to coordinate development plans at the village and ward levels respectively. Overall, the rural district development planning was premised on the understanding that community participation in development planning would result in buy-in from local people when it came to implementation of the plans (Mandondo, 2001). Further, it was intended to facilitate an equitable distribution of natural resources as everyone in the community could become involved in the planning of the governance of natural resources (Manhokwe, 2010). The planning is such that village level plans are coalesced into ward plans which are then forwarded to the district and finally provincial levels. The local level plans are then reconciled with national development plans for implementation.[38] The process of implementing this participatory bottom-up approach to natural resource conservation has been difficult. For example, the election of the VIDCOs and WADCOs was fraught with many challenges, not least of which was infiltration of the supposedly democratic posts by ruling party activists which led to the committees serving as an extension of the ZANU PF commissariat (Makumbe, 1998).

[38] See Mandondo (2001) for a detailed account of how the planning process is carried out.

The VIDCOs and WADCOs effectively usurped the roles of the traditional structures that used to deliberate on many issues, not least of which was the governance of natural resources. The District Council and its ancillaries – the WADCOs and VIDCOs – became the influential modern political authorities that implemented development and conservation plans, bypassing traditional leaders (Derman, 1996).

As in the colonial period, the disempowerment of TAs was not easy. The TAs continued to exercise their power in communal areas. Thus, the ensuing years saw feuding for legitimacy and influence between the traditional structures and the VIDCOs and WADCO, the newly elected structures of governance. In particular, traditional leaders felt that their roles were being trivialised, and reacted by taking up some of the positions in the VIDCOs or WADCOs in order to fight to regain their space (Makumbe, 1998). The clashing resulted in resource degradation as each warring group asserted its power through populist policies such as absolving offenders of natural resource-related crimes. Cases of rampant resource degradation during this era have been reported (Campbell *et al*., 2001).

The Rural District Councils (RDC) Act

The RDC Act is another important piece of legislation that regulates the use of natural resources in communal areas. Through the Act, Rural District Councils (RDCs) are granted permission to constitute village and ward environment management committees that would oversee the use and management of local resources. While the idea is noble, a number of problems have faced the committees, not least of which is the lack of incentive to operate (Mandondo, 2000) and a lack of legitimacy (Kozanayi *et al*., 2014).

Councils are also mandated to raise revenue from levies, taxes, and tariffs. Levy collection by the RDC should translate into service provision, while with certain revenues e.g. from CAMPFIRE programmes, 50% of the proceeds should be ploughed back into communities (Dzingirayi, 2004. This has not typically taken place because RDCs have been underfunded and therefore end up allocating to themselves the community's share of the project's revenue (Murphree, 2001). This has set RDCs on a collision course with traditional leaders when it comes to the collection of fines from environment-related crimes. Traditional leaders usually collect fines from guilty parties in environment-related cases. The use of this money is

determined by the traditional leader presiding over the case, but typically part of the fine is shared among the court assessors, and the rest is taken by the traditional leader.

This Act also empowers the Minister of Local Government to appoint three chiefs per district who can participate in all RDC planning meetings as ex officio members. As such, the chiefs have no voting rights, but because they command a lot of respect, their suggestions usually influence decisions. Thus, in theory, the inclusion of chiefs in the RDC ensures that customary issues are articulated at this level.

The RDC Act also stipulates that every District Council should have an environmental management subcommittee. It is headed by a chairperson and is supported by technocrats, particularly from the Forestry Commission, EMA, Agritex, the RDC, and elected ward councillors. Ordinary residents can be co-opted onto this committee on the basis of their knowledge and interest in environmental issues (Mandondo, 2000). In theory, this Act provides for the incorporation of local people in the governance of natural resources. However, like all well-intentioned legislation, its application needs further interrogation.

The RDC Act has also allowed local relevant bylaws to be established with the participation of residents in the district, or to adopt ministerial model bylaws crafted by the government[39]. The liberty of RDCs to institute their own bylaws has given local people space to participate in the governance of natural resources through involvement in policy formulation. This has been critical in ensuring compliance with the laws (Gumbo, 2005; Keeley & Scoones, 2003). However, the process of crafting the bylaws is a long one and, as a result, not more than two RDCs out of the total 58 in the country have adopted their own bylaws. Moreover, the participation by residents in the formulation of these bylaws is cosmetic at best (Mandondo & Kozanayi, 2006).

The bylaws have been criticised for, among other things, not taking cognisance of coping strategies for peasant communities (Scoones *et al*., 1996). A question that needs critical analysis is, "to what extent do these by-laws affect utilisation and customary practices in the

[39] Generic legal framework that gives RDCs guidance on how they can manage natural resources and do land use planning in the areas under their jurisdiction. Local by laws on the other resource sharing arrangements crafted by the RDC with the participation of the local people. These are endorsed by the RDC for them to be legally binding (Mandondo, 2001).

governance of previously considered low value natural products?" This question will be engaged further in chapter 7.

Communal Lands Forest Produce Act

The Communal Lands Forest Produce Act (CLFPA), Chapter 19:04, spells out the rights to forests of people residing in communal areas regarding forests. First, the Act takes away such rights by stating that all rights in communal lands are vested in the minister. However, Section 19 calls for the devolution of authority to local level in order to promote sustainable management by local residents through elected bodies such as Ward Environmental Management Committees (WEMECs). Section 17 of the CLFPA only allows designated officers to arrest offenders, namely the Forestry Commission (FC), Environmental Management Agency (EMA), Rural District Council (RDC) and any other designated officers. Since WEMECs constitute part of the RDC at local level, they can arrest offenders by issuing tickets stating the offence committed, but they cannot collect fines. This authority is reserved for the RDC.

The CLFPA limits the use of forest products to local own use. The Act also criminalises commercial trading in communally owned natural resources. There is a fundamental challenge with this Act in that the concept of community is open to misinterpretation, and therefore contestation.[40] Further, there is usually a mismatch between administrative and traditional boundaries. This complicates regulating resource access for the state, because trans-district and ward resource harvesting are both possible where traditional boundaries overlap with administrative boundaries (Mandondo 2000; Nemarundwe, 2003). Commercial harvesting of natural resources is allowed, but only after following a laborious permit application process. The RDC Act also provides for the RDCs to charge levies that are commensurate with harvested resources. Such permits for the commercial use of natural resources include charges for concession to harvest hard timber. In sum, the Act appears to have questionable benefits for communities, giving user rights to local people, but limiting that to subsistence level, and providing for the election of local resource managers in the form of WEMECs, while at the same time limiting their role to monitors of compliance to the set rules. The implications of this Act in practice are examined in chapter 7.

[40]For a scholarly problematisation of the concept of community see Mamimine & Mandivengerei (2001).

Forest Act

The Forest Act is the principal law regulating the management of forests. Together with the Communal Land Forest Produce Act (Chapter 19:04), it provides the general framework for forest use and management in Zimbabwe. In particular, Part VII of the Forest Act explains and provides for the regulation of trade in forest produce. The Forest Act mandates the Forestry Commission to take responsibility for the technical aspects of forest use, while the RDC must oversee the fiscal issues. An assigned Forestry Commission Officer provides technical advice to RDCs on all forestry issues in the district. The Forest Act also promotes forestry programmes such as reforestation projects. Because of the overlapping and complimentary roles of the Forestry Commission, the Environmental Management Agency (EMA) and the RDC, these institutions usually work closely as a troika.

4.2 Contemporary traditional governance

Traditional leadership in Zimbabwe is made up of a multi-tiered governance structure. At the top is the chief (*mambo*), under whom are headmen (*madzishe or masadunhu*). The lowest unit is the village head (*sabhuku*). Headmen preside over several villages. A *sabhuku* presides over a number of households ranging from tens to several hundred (Chigwata, 2016). The *sabhuku* (meaning book-keeper) is so called because during the colonial period, the primary responsibility of the village head was to keep the register (book) of all people under his/her jurisdiction for the purpose of tax collection (Nemarundwe, 2003). That role is now the responsibility of the RDC. In Chapter 7, I illustrate how some village heads have continued to carry out this function.

4.2.1 Village heads: the first tier authority

Village heads are largely responsible for the day-to-day management of natural resources in communal areas (Makumbe, 1998). They also enforce customary practices governing the use of natural resources. Traditional leaders also play a key role in the conservation of sacred sites. Most rituals at community level are undertaken under the direction of traditional leaders. Such rituals may include rain making (*mupwa*), and supplication prayers after a bumper harvest (Schoffeleers, 1979). Where new development programmes that will impact

on the environment are initiated in a sacred area, the traditional leaders preside over the cleansing of the area before the project is initiated.[41] Village heads also facilitate the implementation of non-governmental organisation (NGO) and state environmental and developmental projects. Above all, they serve as adjudicators in social issues between members in their villages.

4.2.2 Headmen and chiefs: second and third tier authorities

A headman presides over a number of villages, the number being largely a function of the geographical and historical distribution of ethnic groups that the headman oversees.[42] The area under the jurisdiction of a chief also depends on the distribution of the people he/she rules.[43] Often, traditional boundaries do not coincide with administrative boundaries and this poses challenges when it comes to regulating access to natural resources using statutory regulations (Mandondo, 2000; Nemarundwe, 2003; Nemarundwe & Kozanayi 2001). On the other hand, resource users may use overlapping boundaries as an opportunity to access natural resources in areas which fall beyond administrative boundaries (Kozanayi *et al*., 2014) (see also Chapter 7 for nuances on this in the study site).

At national level, the state recognises paramount chiefs, the Provincial Assembly and a Chiefs' Council. Paramount chiefs oversee a number of chiefs. The Provincial Assembly is made up of all chiefs in a province and is convened by the Minister of Local Government to deliberate important cultural and development issues. The Chiefs' Council is the apex of the modern day traditional leadership hierarchy as provided for in the Chiefs and Headmen Act. It is headed by a Chiefs' President.

The president of the Council of Chiefs represents all the chiefs and sits in parliament as an appointed member of the legislature. Further, ten chiefs, representing the ten provinces in the country, are selected by the president to sit in parliament and articulate traditional issues

[41] Examples are numerous, but one involves the engagement of traditional leaders at Tonhorai village in Chimanimani to lead a cleansing ceremony at a European Union funded irrigation scheme after the contracted civil engineering company experienced several mysterious accidents allegedly after felling sacred baobab trees and destroying graves of local leaders (Mukamuri & Kozanayi, 1999).

[42] Though it is possible to have headwomen, for purposes of this study, headmen will be used to denote both men and women occupying the position.

[43] Some chiefdoms even extend into neighbouring countries. For example, chief Mapungwana in Manicaland Province, Zimbabwe rules over people in Mozambique (MacGonagle, 2007).

in the legislative arm of government (Makumbe, 2010). In theory, the Council of Chiefs is a powerful institution, because it reports directly to the minister responsible for local government and can also seek audience with the president. However, since inclusion in the council is through appointment, there has been a lot of speculation that the chiefs in the council owe their allegiance more to the president who appoints them than to the people they represent (Zimbabwe traditional chiefs: 2003).[44] Mandondo and Mapedza (2003) and Gumbo (2005), argued that even elected leaders tend to be upwardly rather than downwardly accountable, this being a reflection of unequal power dynamics between the state and local resource users in communal areas.

Nonetheless, the fusion of traditional structures within statutory structures represents a higher-level meshing of these two systems of governance. How that melded form of governance plays out at the local level in the governance of natural resources is an area that this research intends to assess.

4.3 Justice delivery using traditional authorities

Access to natural resources is regulated at the village level by the village head. Conflicts arising from resource use at the village level are deliberated at that level.[45] Chiefs and headmen only give guidance to village heads where necessary or try cases referred to them by village heads. To effectively discharge their duties, traditional authorities have a group of aides who serve as court assessors (*makota*). Among the aides is a presiding officer (*muchinda*) whose duty it is to issue subpoenas, and to send suspects or accused persons to the traditional court for trial. Traditionally, people entrusted as aides are either from the ruling clan or those considered to be wise in the community (Beach, 1994). One of the aides serves as a secretary to the traditional leader and as such keeps minutes or writes correspondence on his behalf. Headmen and chiefs have messengers who assist them in the discharge of their duties. The headmen and chiefs' messengers are entitled to monthly allowances from the government.

[44] This is one of several cases covered by the print and electronic media, of chiefs who publicly declare their allegiance to the ruling party (Zimbabwe traditional chiefs: 2003)

[45]This follows the principle of subsidiarity which envisages nesting of powers in any governance hierarchy (Ribot, 2002) so that problems and issues are best addressed and discussed at the level at which they occur.

Referring cases to the chief or headman is a last option that village heads and litigants try to avoid. For the village head, referral of cases to a higher office suggests failure by the village head to stamp authority over the people that s/he leads. On the other hand, villagers' cases referred to the chiefs are costly in terms of the fines and convenience fees for the chief's court. The fines that can be imposed by chiefs are much higher than those charged by village heads. That is not to say that cases are never referred to higher levels for adjudication. Habitual offenders are usually referred to either the headman or the chief for trial, and complainants unhappy with a judgment by the village head have a right to appeal to the headman or chief. Complainants can also seek justice from judiciary courts.

Furthermore, district magistrates superintendent the chiefs in the chiefs discharge of duty as para legal institutions (Chipinge magistrate, personal communication, 12/10/13). Routinely, the chiefs submit summaries of the cases they would have tried and the judgments made. The magistrate acts as a moderator, for example if a chief imposes an excessive fine according to the parameters of the local customary practices, the magistrate will reverse the fine. While the involvement of the magistrate serves to balance the power of the chiefs, it has a negative impact in that if a chief's judgment is reversed, it erodes the integrity of that chief in the eyes of the perpetrator and the residents.

4.4 Interface of customary and statutory forms of governance

Both the colonial and independent states made efforts to harmonise statutory and customary practices through formalising traditional structures (for example through Council of Chiefs) and deliberately enacting laws that recognised the role of traditional leaders in the management of natural resources. Two such laws are the Traditional Leaders Act and the Chiefs and Headmen Act. These are discussed below.

4.4.1 Traditional Leaders Act

The enactment of the Traditional Leaders Act (TLA) Chapter 29:17 in 1998, which bestows authority on traditional leaders in rural areas, was a watershed moment in the re-empowerment of traditional authorities. In executing their duties in natural resource management, traditional leaders are required to do so in compliance with the law. Section 5

(1) (i) of the TLA states that chiefs (and their subordinates) are expected to ensure that land and natural resources found in their area of jurisdiction, are used and exploited in terms of the law. For woodland resources, the pertinent Acts referred to include the CLFPA, RDCA, and the EMA. The EMA makes reference to the need to observe local customary practices and customs in the utilisation of natural resources. The TLA and EMA serve as a bridge between customary and statutory forms of resource governance.

The TLA has helped to reconcile the VIDCO chair and village head roles. It designated the village head as the chair of the village assembly, which is the planning unit at village level. Anyone who is at least 18 years old can partake in proceedings - an agenda-setting platform for the village. Six village assemblies constitute a VIDCO and one of the six village heads in the VIDCO serves as chairperson. So, in essence, the TLA has helped village heads reclaim the political space over which they had run into conflict with the elected institutions like VIDCOs and WADCOs. However, the fact that elected structures such as ward councillors continue to exist side by side with traditional authorities, means that contestation for political space continues.

As described, that contestation has been strongly apparent in the governance of natural resources. An interrogation of the interplay between the re-emerging TAs and the customary practices they use as tools to govern natural resources is apt in order to understand broader issues around the interplay between customary and statutory forms of governance in the governance of natural resources.

4.4.2 The Chiefs and Headmen Act (1982)

The Chiefs and Headmen Act (Chapter 29:01) defines the role of the executive in the appointment, remuneration, and dismissal of traditional leaders. An understanding of how traditional leaders are installed and rewarded in their duties is important, as this has a bearing on to whom they owe their allegiance. Using the principle of heliotropism, Elliot (1999) explains power dynamics using the metaphor of plants and the sun. Just as plants grow towards their energy source, so do organisations move towards that which gives them life and energy. Based on this principle, it has been argued that chiefs are likely to be accountable to the government from which they get their power, and less accountable to the people they

represent. However, this notion has been questioned in recent work that shows that traditional leaders have not necessarily been stooges of the central state (Boone 2003; ECA, 2007; Nuesiri 2014; Baldwin, 2015). Chapter 7 further elaborates on this issue.

A key provision of the Chiefs and Headmen Act (1982) is the empowerment of the president to appoint chiefs and their deputies. The Minister of Local Government installs headmen while chiefs install village heads. The Act stipulates that in appointing a chief in terms of Subsection (1) the president shall give due consideration to any customary principles of succession applicable to the community over which such chief is to preside. A chief shall be paid such allowances as may from time to time be prescribed. Removal of chiefs is provided for in the constitution of Zimbabwe. To ensure that traditional leaders do not overstep their mark, the president is mandated to suspend or fire any chief who breaks the law. In short, statutory allocations of political authority solemnise and legitimise customary practices of hierarchical rule.

Two issues arise from the above provisions. First, the reason for the dismissal of a chief or headmen does not have to be made known. The president can thus capitalise on this provision to purge all traditional leaders who do not support the ruling party.[46] Second, payment of allowances to chiefs and headmen compromises their integrity as they pay allegiance to the state to protect their income (Makumbe, 2010). Parliament, as an integral arm in the balance of power in a democracy, is usually bypassed in determining the allowances for traditional leaders which gives credence to speculation that the allowances are given along partisan lines (Makumbe, 2010; Zimbabwe: traditional chiefs, 2003).[47] However, recent research on traditional authorities in Chimanimani District showed that overall, traditional leaders are not much better off than the rest of the community members (Baldwin & Muyengwa, 2014). All the same though, it can be argued that the involvement of the executive is subject to political abuse by an incumbent president.

[46] During the colonial period, Chief Mangwende was also dismissed for his defiance to colonial rule (Manyukwe, 2003).

[47] For example, after chiefs asked for a direct meeting with Mugabe, they had their conditions of service improved through being awarded loans for all terrain vehicles of their choice, an increase in allowances, bypassing parliament which should set these conditions according to S 4 Chiefs and Headmen Act No. 7, 1992. Trowess, (2013) gives a detailed account of how politicians can use financial inducements to traditional authorities in order to win political support.

4.5 National policies with impacts on traditional authorities and customary practices

In the last fifteen years, the Zimbabwean government has instituted policies that have had an impact on the relations between traditional authorities and resource users. The state has used inducements such as vehicle loans, land allocations, and increases in allowances to win the allegiance of traditional leaders in the face of waning political support (Trowess, 2013). These benefits are given on a sliding scale with chiefs enjoying most perks (Bratton & Masunungure 2006). Other than chiefs, the lower layers of the traditional authorities do not get much in terms of allowances from the government. Each registered village head gets a monthly allowance of $25 while chiefs get $300 each.

A related point is the use of cronyism in power distribution by the state. Traditional leaders have been removed from office because of their political standing.[48] On their part, traditional leaders – through the Chief's President, Mr. Fortune Charumbira – justified their participation in partisan politics by citing the example of Chief Albert Luthuli of South Africa who was awarded the Nobel Peace Prize for fighting for the rights of his people under the apartheid regime[49]. Because, went the argument, the country was under siege from Western countries trying to "recolonise" it, it behooved the traditional leaders to stand up for their people by supporting the ruling ZANU PF government.[50]

The creation of a "politician-ruler" has profoundly compromised the integrity of the chiefs who have come to enjoy disproportionate political power in relation to village heads (Makumbe, 2010). Oppressed and poor residents have started to regard the chiefs with disdain as an extension of the repressive government, just like they did during the colonial period (Bratton & Masungure, 2006). As noted by Makumbe (2010), the state has targeted

[48] Notable examples are Chiefs Norman Chiadzwa in Marange, reportedly an ardent supporter of the opposition MDC party who was dismissed from his post by ZANU PF on frivolous grounds.
[49] Issue was extensively covered in the government owned daily, The Herald of the 12th of July, 2010.
[50] This resonated with ZANU PF's rhetoric that Britain was trying to recolonise Zimbabwe using the MDC as its stooges, hence the "Zimbabwe-will-never-be-a-colony-again" slogan by the ruling ZANU PF party. Further, in 2011 traditional leaders were coerced by the ruling party to sign a petition and demand an audience with the Queen of England for the unconditional removal of economic sanctions imposed on Zimbabwe by the West for human rights abuses. During the colonial period, the Smith Regime used the same tactic of sponsoring chiefs to go to Britain and "explain" to the Queen that as the true representatives of the Africans, they were happy with the Unilateral Declaration of Independence which had been passed by colonial regime. That passing of the UDI had brought down the wrath of international sanctions on the country (Weinrich, 1971).

chiefs and headmen for integration, leaving out village heads who are directly involved in the management of natural resources on a day to day basis.

Despite the dented image of traditional leaders due to their allegiance to government, a clarion call for the inclusion of village level traditional leadership in the management of natural resources has been made in Zimbabwe. The Rukuni Commission of 1994 advocated that traditional leaders assume the role of land authorities in communal areas (Zimbabwe Government, 1994). A corpus of research also made similar recommendations. Murombedzi's (1998) compelling research revealed that the state's attempt to elbow out customary practices and usurp control over natural resources resulted in resource degradation in communal areas. Campbell *et al*. (2002b: ix), reached similar findings, concluding that although considerable responsibility for resource governance now resides with rural district councils (extension of government), *de facto* rules and regulations operative at the village level are centred on traditional authorities." Empirical data from a study by Gondo *et al*. (2010) also shows that governance of natural resources in most rural areas is principally about local rules, far more than it is about prescriptive technical interventions from outside. Mutimukuru (2010) noted that due to massive resignation of staff in the Forestry Commission of Zimbabwe from 2000 up to 2010, there was a void in the implementation of forestry policy around state forests and traditional leaders filled up the void, a find that concurs with Hara *et al*. (2009).

There are also some socio-economic and political developments that have taken place in Zimbabwe that have had a negative impact on the governance of natural resources and the livelihoods of forest-dependent people policies. These include the land reform programme, and the consequent economic challenges resulting in many people from annexed farms or closed down companies settling in communal areas, where they challenged traditional authorities and existing customary practices. While it does not fall within the purview of this thesis to look at the economic and political landscape of Zimbabwe in detail, I highlight these for purposes of giving context in relation to the implications for my studies.

Economic challenges experienced since the 1990s have led to political unrest in Zimbabwe. To deal with civil disobedience, the state has used oppression and force.[51] The examples are many but the *modus operandi* remains the same – in all cases, the operations were ruthless and carried out by the military.[52]

Noteworthy in this regard is the colossal land reform programme and the ensuing unprecedented economic meltdown. There was loss of employment due to the economic collapse associated with the fast track land reform leading to many returnees in communal areas. Operation *Murambatsvina* epitomized the ruthlessness of the state towards its citizens. The operation impacted negatively on the business of some woodcraft vendors who were operating in urban areas and along major highways. *Murambatsvina* was a hugely unpopular national programme initiated by the Government in 2005 to destroy all illegal settlements, initially in urban areas and then along major highways. Urban markets for many products were destroyed as part of this operation (Bratton & Masunungure, 2006). *Murambatsvina* had a far-reaching impact on the governance of natural resources and the effectiveness of customary practices. The operation resulted in over 700 000 people being displaced from urban areas (Tibaijuka, 2005). Some of the evicted urban residents went back to their communal areas without jobs. They started exploiting the environment, including harvesting and processing of baobab products, in order to earn a living (Chibiza & Rwizi, 2009).

At the same time, there had been reduced funding of the forestry sector from treasury since 2000 (Mapedza, 2006). Reduced budgetary support means that government departments responsible for managing the environment lose their capacity to effectively discharge their duties.

The land reform in the 2000s ostensibly to redress historical imbalances in land ownership (Masiiwa & Chigejo, 2003; Masiiwa, 2004) is yet another important policy intervention by the government that has had far reaching impacts on the governance of natural resources. The programme had profound impacts on the ownership of natural resources as previously privately-owned resources were now communally owned (Chigumira, 2010). Ownership of a

51 See also work by Paul Richards (2005) about force and oppression as a policy option in Sierra Leone during the civil war period (1994, and 2002).
52 For example, see Nyamunda *et al*, (2012) on *Operation hakudzokwi* (you cannot go back to the diamond fields)

total of over 8 million hectares changed from private to communal and freehold, which result in the greatest transfer of property rights in southern Africa in recent times (Mamdani, 2008). Use patterns of forest resources under the new regime also changed, with resource use becoming indiscriminate (Chigumira, 2010). Land is critical in the politics of access to natural resources because once people have access to land, they usually also have access to a range of resources found on that land (Matowanyika, 1991; Bruce *et al*., 1993). Gondo *et al*. (2010) reported changes in access to mopane worms, a high value NTFP traded mainly by poor households in newly resettled farms. In some cases, indigenous people invaded state land to farm or harvest natural products leveraging on the lawlessness that characterised the land reform program (Mubvami, 2004).

In 2007, diamonds were discovered in Marange, near the study site. There was a huge influx of people coming to mine alluvial diamonds in both Jinga and Nyanyadzi (Nyamunda *et al*., 2012). Criminal activities resulted, often influencing the way baobab products were accessed, such as over harvesting of baobab bark. This issue is discussed further in chapter 7.

4.6 Conclusion

This chapter has presented a historical overview of the interaction of the state and traditional authorities in the management of natural resources. This has implications for the interplay between customary and statutory forms of governance which the two forms of power use to regulate use of natural resources. While most literature portrays the relationship in dichotomous terms - that is a subjugating state and the subservient traditional authority, the relationship is complex. Traditional authorities have agency and have re-asserted their authority in the political domain. Using empirical evidence in Chapters 6, 7 and 8, I illustrate how constant interactions between customary and statutory forms of governance play out in regulating access to natural resources in communal areas. The next chapter provides back ground information about the study site.

CHAPTER 5: EXPLORING LIVELIHOODS IN NYANYADZI AND JINGA

This chapter provides contextual background to the research and describes the demographics and livelihoods pursued in each of the study sites. Two areas, Nyanyadzi and Jinga were selected on account of the significant differences in their use pattern of baobab products despite their proximity to each other (20 km apart), as well as their similarity in natural resources endowments.

In this chapter, the biophysical characteristics and agricultural potential of the two areas are described, these being key drivers of local livelihoods. The role of baobab products within broader livelihoods are also presented, including their harvest and use by different households and income patterns.

5.1 Location and administration of the study sites

The study was carried out in the Chimanimani District, Manicaland Province Zimbabwe. Manicaland is 36,459km^2 in size. At 1,755,000 people (Central Statistical Office (CSO), 2012), Manicaland's population is 13.5% of the national total. The province is made up of eight districts; at 3,353km^2, Chimanimani District is the smallest. The Chimanimani District is located at latitude 19.75 degrees and longitude 32.67 degrees. It has a population of 133,810 people (CSO, 2012) - 7.6% of Manicaland. Chimanimani town, the administrative centre, was established by Thomas Moodie in 1892, who named it Melsetter (Sinclair, 1971). European traders had already been active in the area, making it one of the first places to be colonised by the whites (Mapira, 2006). By the time colonialists came in 1890, the ethnic groups found in Jinga and Nyanyadzi, the Garwe of Mutambara and Gumbu of Gudyanga lineages respectively, were already settled there (Bruce, 1892; Mapira, 2006).

The research was carried out in three wards - Chakohwa (ward 3), Nyanyadzi (ward 8), and Gudyanga (ward 20). Chakohwa Ward, located about 20km north of Nyanyadzi, is made up of eight villages, of which Jinga is one. This ward falls under Chief Mutambara of the Garwe clan. The average household size in all three wards is 4.2 people (CSO, 2012). Jinga has a population

of 283 households, representing 1 300 people. Table 5 shows the demography of the three wards[53].

Table 5: Population size for study sites

Ward No.	No. of households	No. of males	No. of females
3 –Jinga (Chakohwa)	1322	2554	2934
8 -Nyanyadzi	2066	4085	4665
20 -Gudyanga	1715	3304	3895
Total	**5103**	**9943**	**11494**

Source: CSO, 2012

Gudyanga and Nyanyadzi wards are adjacent to each other and comprise the Gumbu clan, under Chief Muusha. These two areas are referred to as Nyanyadzi in this study. The choice of study site was influenced by the fact that the area has one of the highest density of baobab trees in Zimbabwe (Mudavanhu, 1998). In the case of Nyanyadzi, the area has a long history of baobab product use, dating back to the 15thcentury (Bruce, 1892), with both customary and statutory forms of governance used to regulate access.

Jinga Village was included to give insights into customary practices of baobab governance with minimal state intervention, unlike Nyanyadzi where both customary and statutory practices are used simultaneously. Use of negative evidence (non-activity) has been recommended in social studies. According to Neumann (1997), the non-appearance of something can reveal a great deal and provide valuable insights about an issue under study elsewhere.

5.2 Ethnicities in the study sites

The Chimanimani people are mainly from the Ndau tribe which is a composite group of which Garwe and Gumbu are subsets (Mapira, 2006; MacGonagle, 2007). According to oral and written accounts, the ethno-history of tribes occupying Chimanimani traces their origins to

[53] The number of households in Nyanyadzi and Chakohwa has increased by 446% and 189% respectively since 1965 (Latham, 1966; CSO, 2012).

the area known as Mbire (Wedza District). They appear to be an offshoot of the Varozvi who migrated eastwards and have a common history with the Mutema and Garahwa in Chipinge (Latham, 1966). Settlement of the Bantu people, now known as Ndau, started around the mid-17th century. Preceding the arrival of white settlers in the area in the 1890s, the Ndau chiefs and their people were subjected to Nguni raids during the *Umfcane* uprising and northward migration from South Africa (Beach, 1994). During these raids, the Nguni took women and cattle and subsequently incorporated the Ndau into the Gaza state which the Nguni had established in 1830 (MacGonagale, 2007; Perman, 2008). There have been immigrants settling among the indigenous people but overall, the indigenous people still dominate the local politics.

There were many explanations as to why people in the study site are called Ndau. One prominent version is that the name arose from the way people greet each other, "*Ndauwe*" which is a polite way to say, "We salute you" (MacGonagle, 2007). Whatever differences there are about the origins of the name there is unanimity among researchers that relative to other tribes, the Ndau people are generally regarded as culturally conservative (Sinclair, 1971; Beach, 1994; MacGonagle, 2007; Perman, 2008). Central to their social cohesion is the use of totems as an enduring identity maker in social structures and group membership (MacGonagale, 2007).

5.2.1 The Garwe of Mutambara

People of Mutambara, including of Jinga, are of the Garwe-crocodile clan (Sinclair, 1971). This term arose after they reportedly crossed the flooded Odzi River on the backs of crocodiles while fleeing from their adversaries (Beach, 1994; Hot Springs report, 1995).

Only one line of chieftaincy succession is recognised in Mutambara – from father to sons in order of seniority (Latham, 1966). This pattern is also observed in Jinga. This is in contrast to the Muusha chieftaincy that was shared between several sub clans, creating leadership problems, sometimes with implications for the governance of natural resources (Chapter 7).

5.2.2 The Gumbu of Nyanyadzi

According to oral history, Garamanhuwa was the founding ancestor of the Gudyanga family of Nyanyadzi. He emigrated from Mbire and had three sons, in order of seniority: Muwusha, Nechiora, and Gudyanga who settled in different areas. Muwusha decided to go up the escarpment, Nechiora went just below the escarpment, while Gudyanga decided to settle in the valley (Latham, 1966; Sinclair, 1971). Gudyanga went on to have a large family. Two of his sons, Chiadzwa and Chamutsa, crossed the Odzi and Save rivers to establish their own chiefdoms in Buhera and Bocha respectively (Beach, 1994). During the time of the study, Chiadzwa and Chamutsa were instrumental in the provision of baobab products to Gumbu people from Nyanyadzi.

Muririrwa, the leader of the Gudyanga people who settled in Nyanyadzi, became a proficient salt maker (Latham, 1966). He supplied this commodity to the chief, carrying it in a *gumbu*[54] (soft beaten bark container). Hence the residents of Nyanyadzi came to be called Gumbu – those who carry salt in a fibre bag. The making of *gumbu* seems to have been the starting point of what was later to become a lifeline mat-making business for the locals. It also put to test local customary practices regulating baobab bark use over two centuries later. The Gumbu people also had a long history of making fibre blankets *(gudza*), with earliest accounts dating back to 1758 when St. Vincent Erskine, a European explorer, described the use of *gudza* - made from baobab bark by the Ndau (MacGonagle, 2007). At the time of this study the Gumbu weavers and their relatives at Biriwiri, some 80 km away, were still actively weaving such blankets from the bark of *Brachystegia spp* for the domestic and export market (Bongo & Bourdillon, 2001).

5.3 Socio-political status

The emergence of a strong political opposition to the Zimbabwe African National Union – Patriotic Front (ZANU PF) government in this region is also noteworthy. A key similarity between Nyanyadzi and Jinga was that during the time of the study, both areas were in the hands of the Movement for Democratic Change (MDC) – the national opposition political

[54] A distinction is made between *gumbu*, bag made from fibre and Gumbu, the people who derive their name from making the *gumbu* bags.

party. The change in the political landscape is important in shaping the roles played by traditional leaders who are regarded as the interlocutors of customary values and rules. Some political parties have been known to coerce traditional leaders to become appendages of their parties and be partisan in their governance (We don't belong, 2011). Central for this study, is that repressive policies of the ruling ZANU PF party made locals develop a deep seated disdain for government, taking the party to be synonymous with the state. As this thesis explains, this had wide ramifications for resource governance.

5.4 Biophysical conditions

The study site falls into Natural Region 5 of the agro-ecological zones in Zimbabwe, an area which is dry and prone to droughts (Moyo *et al.*, 1991). The average annual rainfall ranges from 1,114 mm in Chimanimani to 500 mm in Nyanyadzi (Hot Springs report, 1995; Bolding, 2004). In both Jinga and Nyanyadzi the rainfall was poorly distributed, with recurrent mid-season droughts. Average monthly maximum temperatures are 25.9°C in July and 36°C in January. Average monthly minimum temperatures range between 9°C in June and 24°C in January (Moyo *et al.,* 1991). The predominantly dry weather with low and poorly distributed rainfall, punctuated by mid-season droughts, has made dryland agriculture very risky.

Vegetation types range from deciduous trees in the uplands, to miombo species (*Brachystegia spp*) in the middle level areas, and Mopane (*Colophospermum mopane)* woodlands in the valley (Moyo *et al.*, 1991; Bongo & Bourdillon, 2001). The climax vegetation is mopane woodland characterized by sparse vegetation that is dominated by *Adansonia digitata, Terminalia sericea, Berchemia discolor* and *Acacia nilotica* (Mudavanhu, 1998; Bolding, 2004). Soil type ranges from sodic to deep alluvial soils (Moyo *et al*, 1991; Nyamapfene, 1991).

5.5 An overview of livelihood options in Nyanyadzi and Jinga

Households in Nyanyadzi and Jinga pursue a range of farm and non-farm activities in order to spread the risk associated with unstable production systems in the dry savannah. Income levels differed across households and sources.

5.5.1 Annual income

Most (73.3% of the households in Jinga earned at least $500 per year while in Nyanyadzi, 45.6% of the households earned the same amount for the same time period. Less than 5.0% people earned above $5000 a year in both communities (Table 6).

Table 6: Household annual income for Nyanyadzi and Jinga

Annual Income level ($)	**% of households Nyanyadzi (n=218)**	**% of households Jinga (n=118)**
Less than 500	54.4	26.7
500-2000	28.6	51.7
2001-5000	13.3	16.4
Above 5000	3.7	5.2
Total	**100.0**	**100.0**

N=336

Of all the households in the study site 12.7% obtained income from livestock, 1.5% from the sale of crops from a local irrigation scheme, and 1.5% from working on the diamond mines. Remittances contributed 0.8% to the households. Only 23.8% of the households had at least one member in full-time employment, while 13.7% had at least one member engaged in temporary employment.[55] Employment at the newly opened diamond fields, was ranked low, reportedly because only a few, politically connected people were employed at the mines.

Despite similarities between Jinga and Nyanyadzi, there were some important differences in terms of the economic pathways they pursued. These are presented in the ensuing sections.

5.5.2 Livelihoods options in Nyanyadzi

Table 7 presents livelihood activities pursued in Nyanyadzi, ranked according to their contribution to local livelihoods.

[55] At the time of the survey in 2011/2012, the national economy was in a downward spiral with national unemployment at 85 percent. See Cross (2009), for details.

Table 7: Ranking of livelihoods options in Nyanyadzi

Income source	Score[56]	Rank[57]	Remarks
Livestock	24	1	A major source of income and food for most households. Demand for meat at the diamond mines pushed up the price of livestock.
Baobab products: fruit and fibre	20	2	Many people from the community are involved There was a ready market for products.
Horticultural gardens	17	3	Popular activity with women and had better returns if production was done out of season.
"Piece jobs"	12	4	These were opportunistic jobs, for example constructing houses or cattle pens.
Irrigated agriculture	10	5	Crop production was in decline due to unreliable water supply.
Rain-fed crop production	6	6	Bad weather had written off crops over the preceding 12 years, with depleted soil fertility and yield.
Working at the diamond mines	5	7	Very few people were employed at the mines.
Working on sugar cane estates-Green Fuels	3	8	The ethanol producing company intermittently hired casual labourers from Nyanyadzi[58]
Wood carving	2	9	Specialised skills were required so only a few people benefitted.
Fishing in Save River	1	10	A few people had fishing nets and baskets with nets prohibited by the Department of National Parks.
Total	**100**		

Source: Field notes: Group meeting with residents from Nyanyadzi, 12/3/11

The rearing of livestock, notably goats and cattle, was a source of income and nutrition, with ownership by 67.0% of households and their sale locally to households and butcheries. Commercial use of baobab products was ranked second in terms of its contribution to the local household economy on account of many (over 60.0%) households involved. There was

[56] This was the perceived contribution of the option to local livelihoods. Importance was illustrated by the number of counters allocated to each option.
[57] This was prioritisation of the options according to their perceived weighting by local informants.
[58] Production at the Ethanol Plant was disrupted on many occasions due to political haggling over the legality of the project (End of Chisumbanje: 2013).

also a long history of using baobab fibre to make crafts in the area. The baobab tree has clearly played a central role in the local cultural history.

Despite the importance of agricultural food in this dry area, irrigated crop production was ranked low. Only 21.7% of the households had plots in the irrigation schemes. Further, production at the irrigation schemes had been low since early 2000 due to poor maintenance of irrigation infrastructure.

Employment at the diamond fields and sugarcane estates was ranked low on account of there being few local people working in these two areas. Corruption and nepotism were cited as hindrances for locals to secure employment at both Green Fuels and diamond mines at Marange.

5.5.3 Livelihoods options in Jinga

Table 8 presents the range of livelihood options pursued at Jinga, ranked according to their perceived contribution.

Table 8: Ranking of livelihoods options in Jinga village

Livelihood option	Score	Rank	Remarks
Livestock	21	1	A ready market existed, provided by workers at the diamond mines. Lucrative prices were offered due to high demand.
Beekeeping	18	2	Honey was mainly sold to bulk buyers from urban areas. Women and children sold bottled honey to motorists along the highway.
Vegetable production	15	3	This was a mostly female activity carried out seasonally from May to November. Vegetables were sold to neighbouring areas and diamond mines.
Illegal diamond mining	12	4	This was an opportunistic activity for many people before government declared it illegal.
Dry land cropping	10	5	Crops often failed due to poor rainfall distribution.
Trading	9	6	Merchandise included second-hand clothes
Working at the diamond mines	6	7	Just a few "politically" connected individuals employed.
Brick moulding	4	8	Bricks sold at $30/ 1000 and there was a ready market. This was done by a few, usually poor, households.
Selling *quelea* birds	3	9	Birds were caught by men from March to July. They were sold locally or in Mutare at $1 for 7 birds.
Selling baobab fruits	2	10	Insignificant contribution because few people are involved in selling of fruits.
Total	**100**		

Source: Group discussion with men and women in Jinga, 15/3/11

Like in Nyanyadzi, livestock played an important role as a source of income. In both Jinga and Nyanyadzi, cattle were also used as a source of draft power and were a symbol of status[59]. Livestock was ranked highly after the price of goats and cattle went up around 2008 in response to high demand from *magweja*[60] and later on, from workers at the diamond mines.

Most male residents in Jinga ranked beekeeping as their main source of livelihood. Honey was sold to bulk buyers at between $2 and $3 per kilogram.

[59] Cattle play a central role in the lives of the indigenous people as they provide multiple uses such as draft power, milk, manure, hides and are used to pay the price of a bride when marrying. Therefore, owning cattle is viewed as a source of wealth and status.

[60] Colloquial for illegal artisanal diamond miners. There was a huge influx into the area by illegal miners when diamonds were discovered in Marange area.

Illegal diamond mining was considered important despite the government sending in the army and police to flush out artisanal miners in 2009. Also important is riverine horticultural production.

The selling of baobab products was ranked last as it was not perceived to be lucrative "because baobab fruits are ubiquitous" and no one would buy them. Selling of fruits was limited to isolated bulk fruit sales in urban areas (Box 1) and opportunistic sales to local ice lolly makers (Box 2).

5.5.4 Comparison of livelihoods between Nyanyadzi and Jinga

For both Nyanyadzi and Jinga, livestock were considered to be a main contributor to local livelihoods, partly due to high levels of ownership. More than 90.0 % of households in both areas owned chickens and goats and there was a ready market locally and in neighbouring areas. For example, at the time of the survey a Dutch based NGO was buying indigenous goats and chicken in both areas with the intention of using the livestock as genetic material in other rural areas.

Residents in both areas also engaged in dryland and (limited) irrigated agriculture and had high unemployment rates, epitomising the dire economic situation in the country which had over 90.0% employment at the time of the survey. Both sites had a high density of baobab trees (Mudavanhu, 1998).

Livelihoods for men were different between areas. The Garwe of Jinga had a long history of beekeeping which had become part of the local culture; this was missing in Nyanyadzi[61]. To the contrary, craft making was a key cultural activity in Nyanyadzi. These differences were reflected in the ranking patterns of local livelihoods.

[61] The bee keeping industry in Jinga started before the colonial period with locals using traditional bark hives and barter trading honey in neighbouring communities. Later, commercial buyers started buying honey from the area and this boosted production with many more people getting involved (Hot Springs Report, 1995).

Box 1: Bulk trading of fruits in Jinga

Fifty-one-year-old Mrs. A had traded baobab fruits in Mutare city since the 1990s. She was born in Jinga village but got married in neighbouring Marange District. Initially, she harvested the baobab fruits from Marange and used scotch carts to transport the fruits to the main highway in Jinga. She would transport an average of 50 bags to Mutare and Harare, 80 and 350 km away respectively for sale at open markets. Later on, to cut down on her costs, she started collecting the fruits from Jinga while staying with her parents. Soon after the village head banned her for cultural reasons. She was also banned from using Jinga village as a loading bay for her baobab fruits. So, Mrs. A moved to nearby Nemutenzi village. She hired local people to collect the fruits and paid them in electrical gadgets or clothes bought in Harare.

In the 1990s, a bag of baobab fruits earned her US$3. The baobab selling season ran from June to October and she made an average of four trips per year, each trip earning her an average of US$150. She was actively involved in this trade for a decade from the 1990s after which she stopped due to ill health. During that period, she was able to raise enough money to build a brick and asbestos house and furnish it.

5.6 The importance of baobab as a natural resource

When compared with nine other natural resources in Nyanyadzi, baobab was ranked as the most important (Table 9). Water was rated second, largely due to the fact that it supports every facet of life. *Berchemia discolor,* a fruit tree whose bark was used to colour crafts, was ranked fourth, indicating its important role in the craft industry. Fruit of *Berchemia spp* was also a favourable snack and when dried, was sold in urban areas at $0.50 per cup (250 ml).

Table 9: Ranking of local natural resources in order of their perceived contribution to local livelihoods in Nyanyadzi

Resource	Score	Rank	Remarks
Baobab products	24	1	Used by "everyone" in the area It is ubiquitous
Water	15	2	Critical for watering livestock, crops and for brick moulding
Grass	13	3	Browse for livestock Making courier baskets Controls soil erosion
Berchemia discolour	11	4	Fruits were consumed or sold Bark from trunk or roots used to dye crafts from baobab fibre
Soil	10	5	Sustenance of crops and trees Clay was used to make artefacts Produced salt in riverine areas[62]
Reeds	8	6	Making mats and baskets Thatching houses Browse for cattle in the dry season
Securinecra spp	7	7	Fruits are eaten and bark is dye for fibre crafts
Tsopotwe-runner plant	5	8	Craft making
Afzelia quansensis	4	9	Furniture making by skilful people
Fish	3	10	Fish was caught by men in the Save river Source of food and income
Total score	**100**		

Source: Group meeting with residents from Nyanyadzi 2/3/ 2012

In Jinga, water was rated as the most important natural resource (Table 10). This came against a backdrop of increasing irrigated vegetable plots in the area.

Women were actively involved in horticultural production with the preceding five years seeing an expansion in irrigated plots opening up along the Odzi and Murare Rivers in the village. While the majority of households used head buckets to irrigate their crops, increasingly households were investing in water pumps which enabled them to irrigate bigger plots. German Agro Action, a German NGO was also establishing community nutrition gardens in the village.

[62] Salt making occupies an integral part in the history and development of the Gumbu people (see chapter 3)

Table 10: Ranking of local natural resources in order of their perceived contribution to local livelihoods in Jinga

Resource	Score	Rank	Remarks
Water	22	1	Supported people and animals Crop production
Soil	19	2	Crop production Moulding bricks for construction and sale
Trees	16	3	Flowers provided nectar to bees for honey production Firewood for domestic use and firing bricks
Grass	14	4	Browse for livestock Thatch for houses
Quelia birds	10	5	Source of proteins and income as the birds were sold
Berchemia discolour	7	6	Fruits were eaten and sold locally and in urban areas
Mopane worms-*Imbresia belina*	5	7	Source of proteins Could be sold for cash
Reeds	4	8	Making mats Browse for cattle in the dry season
Baobab tree	3	9	Fruits for local use Fruits were ubiquitous and therefore "valueless"
Total score	**100**		

Source: Community meeting on 11/3/12

The baobab tree was ranked the lowest because fruits are readily available to anyone in the village. No ready market for baobab products existed in the area. By way of contrast men in Jinga were bee keepers and also sold *Quelia* birds which they trapped in the wild using stone traps and nets.

5.7 Uses of baobab products

A myriad of consumptive and non-consumptive uses of the baobab tree were identified in Jinga and Nyanyadzi (Table 11). Where uses were dissimilar between Nyanyadzi and Jinga, these are shown separately.

Table 11: Uses and users of the different baobab products in Jinga village and Nyanyadzi

Baobab product	Users	Remarks
	Consumptive uses	
Fruits	*Nyanyadzi:* Local households, Bulk collectors who sell in towns, Local ice lolly makers, Companies, namely: Kaite, Speciality Food for Africa, Mutare Ice Creams[63], Local entrepreneurs such as Muuyu Enterprises, SAFIRE	"Everyone" has use for baobab fruits". Pulp made into porridge mixed with mealie meal. The baobab fruit was likened to the diamond of the Valley. SAFIRE trains harvesters in sustainable harvesting and good business practices.
	Jinga: Local households	Use limited to domestic purposes with few cases of sales.
Seed	*Nyanyadzi:* Mainly women Private buyers e.g. Kaite	Seeds can be eaten raw if soft or after being boiled and salted *(njoko)* or made into "coffee." Seed pressed into oil by companies.
	Jinga: Local households	Seeds are eaten raw if soft or after being boiled and salted.
Shells	Women Craft makers	Burnt shells can be used as a soda. Shells can be made in kitchen scoops and shakers used in traditional music and stencils for designing clay pots. Briquettes.
Roots	Herbalists, Traditional mid wives	Used to treat stomach ailments and in rituals to widen birth canal in pregnant women. Roots used for baby "fattening."[64]
Leaves	Women Livestock farmers	Cooked and saved as a vegetable. Provide browse for cattle.
Tubers	All but mainly young boys	Eaten as a snack.
Non consumptives uses		
Bark	*Nyanyadzi:* Craft weavers "Everyone" as twine for tying purposes. Poor households are the main harvesters.	Both men and women are involved Fibre sold at $0.1/bundle in Nyanyadzi. In Jinga use is limited to domestic and with no sales.
	Jinga: Men	Use limited to domestic purposes-for cordage.

[63] Mutare Ice Creams used to buy baobab pulp from Nyanyadzi around 2004-2006.

[64] Young babies are immersed in a concoction of baobab roots and other herbs in a ritual that is believed to result in the babies growing fat and huge like the baobab trunk.

Cultural values	Pentecostal churches Political parties Ritual leaders Farmers Residents	Worshipping sites Cemetery "resting" places for the spirits of the dead (e.g. sacredness on page 160). Territory marking and publicity[65] Sites for rain making purposes *Zvitumba*-guard houses in the field The tree gives identity and aesthetic value to the local people (e.g. Gumbu people page 82).

Source: Group discussions held with residents from Nyanyadzi and Jinga village, 11/2/12 and 14/2/12

Views on the value of baobab products differed between locals and technical government staff. One District Forestry officer remarked, "We are overwhelmed with requests from NGOs that want to commercialise baobab fruits in in the Valley. How lucrative is that business, because when we consider the selling price for pulp we get the impression that the values are very low?" (Chimanimani RDC, 23/11/14).

On the other hand, local harvesters in Nyanyadzi put a high value on the fruits and fibre. One old man in Gudyanga village observed, "Since time immemorial, people in the Valley have survived on baobab fruits". Rituals were conducted under some of the big trees by traditional leaders and leaders of some churches. Such trees were revered by the local people.

5.8 Harvesting patterns

5.8.1 Seasonality of harvesting

In total (53.8 %) of households surveyed in Jinga and Nyanyadzi harvested baobab products.

In Nyanyadzi most baobab products were harvested during the dry season from April to September, covering a critical food and income gap. A common practice among households was to stock fruits in granaries for use later in the year. Year-round harvesting was common for bark fibre. This was a recent phenomenon due to economic hardships. Leaves and tubers were normally harvested during the rainy season (November to April).

[65] Local informants claimed that members of the opposition political party were responsible for the graffiti on big baobab trees canvasing for votes or territory marking in a society where democratic space was controlled by the ruling political party. Historical markings on baobab trees by early European explorers have also been reported (Mullin, 2003).

In Jinga, fruits were harvested between April and August. The fruit season was said to be short due to foraging by baboons. Fibre and roots were also harvested by residents.

5.8.2 Quantities of baobab products harvested

The quantities of the different products harvested in 2011 as well as average income per household from each product are presented in Table 12. Fruits and fibre were the main products that were harvested in large quantities either for domestic use or for sale.

5.8.3 Generating a wealth index from which wealth classes were derived

I distinguished households' use and management of baobabs according to their wealth classes. The wealth classes were derived by classifying a wealth index of all study households into quintiles (five classes). The wealth index was created using Principal Components Analysis (PCA). This technique involves combining several original variables into a few derived variables. In this case, there is a single derived variable, which is interpreted as a wealth index. Original variables investigated included paid employment status of household head and other household members, household livestock endowments (numbers of cattle, goats and sheep), productive equipment (ox-carts, ploughs, hoes, axes), other asset endowments (bicycles, cars), ownership of plots in irrigation scheme and type of shelter.

A number of analyses were conducted in creating the wealth index. In the initial analysis, the first principal component (the derived variable) accounted for 28.0 % of the variation in the original variables. I reasoned that numbers of hammers and axes probably had a greater bearing on household size than wealth, so these variables were removed from the second analysis. Variables identified to have loadings less or equal to 0.30 were also removed in the third analysis.

In the third analysis, the first principal component (that was adopted as the wealth index) accounted for 33.0 % of the variation in the original variables. The original variables that strongly defined the wealth index by being strongly loaded on the first principal component included employment status of household head (0.54) employment status of other household members (0.65), ownership of irrigation plots (0.37) and numbers of bicycles (0.73), ox-carts (0.74) and radios (0.74). Other variables included in the analysis but with weaker loadings

were ownership of cattle (-0.60), goats (-0.42) and shelter type (-0.42). Even though Scoones (1995) identifies the latter set of variables as wealth related, this may not apply to the study area because most households may be investing income realized from employment and irrigation plots in these assets. The wealth index was classified into five equal percentiles, each of which represents a wealth class on a scale spanning from very poor, poor, coping, managing and managing well.

Table 12: Quantities of products harvested and income realised from product sales disaggregated by wealth quintiles in Nyanyadzi and Jinga

Wealth quintiles	Fibre (bundles)	Fruits (buckets)	Pulp (buckets)	Income ($)
Nyanyadzi				
First				0 (±0)
Second	230 (±466)	26 (± 31)	28(±30)	126(±343)
Middle	160 (±179)	29(± 78)	54(±73)	72(± 166)
Fourth	77 (± 80)	21(± 27)	21(±46)	172(± 590)
Top 20%	142(± 270)	16(± 19)	13(±19)	73(± 208)
Total	167 (±335)	22(± 36)	23(±37)	103(±322)
Mean value	74.72	63.70	12.13	3.55
S.D	85.46	44.00	4.92	3.54
Jinga				
First		4 (±3)	0 (± 0)	0 (±0)
Second	36 (±53)	8 (±8)	19 (±7)	9(±31)
Middle	177 (±199)	6 (±7)	0 (±O)	21(±76)
Fourth	20.5 (±23)	11 (±19)	19 (±9)	34(±131)
Top 20%	15 (±9)	5 (± 4)	(±0)	0.4(±1)
Total	51 (±94)	8 (±10)	12 (±9)	15(±71)
Mean value	12.61	8.32	6.41	1.61
S.D	13.76	6.88	5.10	3.42
t-value	1.76	3.05	1.98	0.97
F- value	2.9	33.39	0.00	0.22
Significance	+	***		

N=336

+ significant at 0.12%

*** significant at 1%

5.8.4 Harvest for domestic use

Baobab fruits still played an important role as a food source. Fruits were eaten throughout the year. Households stored fruits in secure places away from the rain, for example in granaries to increase the shelf life of the fruits. The quantities of the different products harvested in 2011 for subsistence use are presented in Table 13.

Table 13: Quantities of baobab products harvested and by products and income made per household in Jinga and Nyanyadzi, 2011.

Product	Total for own use (mean) (std)
Fruit (buckets)	5.16 (±4.54)[66]
Pulp (buckets)	0.00
Oil (litres)	2.83 (±3.97)
Leaves (bundles)	15.68 (±31.04)
Tubers (dozens)	1.71 (±0.92)
Ice lollies	18.94 (±16.80)
Coffee (cups)	6.61(±6.65)

5.9 Characterisation of harvesters

5.9.1 Education of harvesters

Quantities of fibre, fruits, and pulp harvested were tallied against the highest level of education of the harvester (Table 14). Education levels of villagers clearly determined their level of involvement in the harvest and trade of baobab products. The general trend showed that collection of baobab fibre, pulp, and fruits was mostly done by villagers with low education levels.

There was a linear relationship between education levels and fibre collected (p value of fibre is significant at 0.01%). Much of the fibre was harvested by less educated residents. The same was true for fruit harvesting (p value of fruits was significant at 0.01%).

[66] A bucket weighs about 7.5kg of pulp and seed.

The pulp value was highly significant at 1 % and showed a very strong positive relationship between education level and amount of pulp collected. The higher the level of education, the less involvement in pulp collection. Value addition, as reflected by buckets of pulp processed, suggested that the lower the level of education, the more likely the collector was to process the baobab fruits (Table 14). Buyers like Kaite offered a premium price for pulp ($0.20/kg).

With regards to annual income from the sale of baobab products, in Nyanyadzi, those with incomplete "O" levels earned the highest amounts of money per year ($234). In Jinga, a similar trend was noted though the annual total income from the sale of baobab products was small ($33) compared to Nyanyadzi.

Table 14: Level of education and annual means of quantities of fibre, fruit and pulp produced and income earned for Nyanyadzi and Jinga.

Highest level of education	Income ($)	Fibre (bundles)	Fruits (buckets)	Pulp (buckets)
Nyanyadzi				
No education	78.1	119.7	13.0	9.1
Grade 7	71.1	86.2	16.6	4.9
Incomplete "O" level	233.6	35.5	16.7	5.2
"O" level	65.6	100.7	13.0	2.1
"A" level	0.0	25.0	3.5	0.0
Technical Diploma	0.0	15.0	10.0	0.0
Jinga				
No education	0.5	10.7	1.7	0.0
Grade 7	23.4	9.0	6.8	1.1
Incomplete "O" level	34.5	15.0	8.3	8.5
"O" level	11.3	15.2	5.6	0.0
"A" level	6.0	0.0	15.0	0.0
Technical Diploma	0.0	0.0	1.00	0.0

Education was also used to analyse craft sellers sampled along a 5km stretch in Nyanyadzi in 2013 (Figure 3).

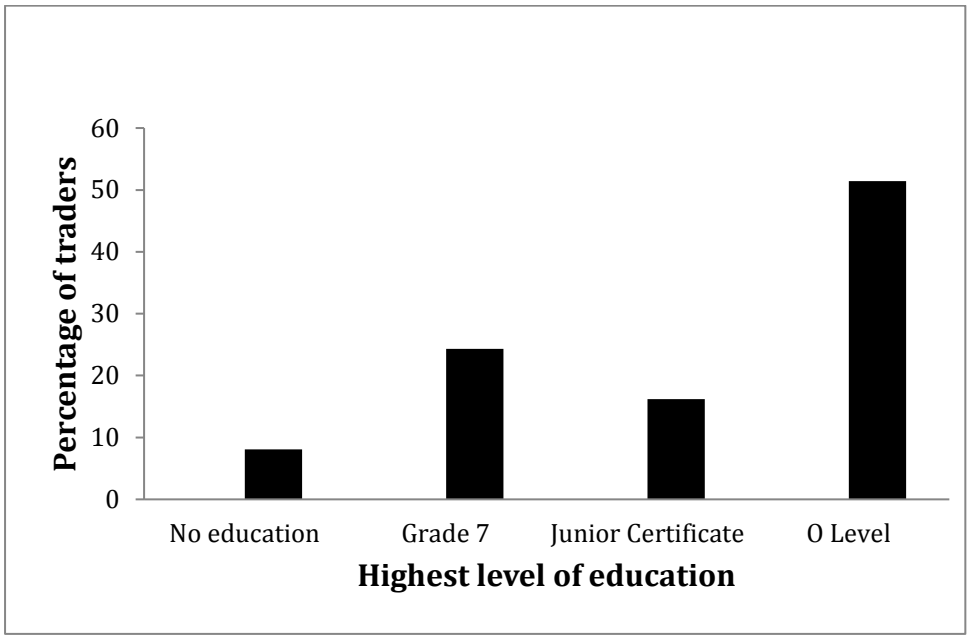


Figure 3: Level of education of craft traders along the highway in Nyanyadzi

N=37. Field data, 2012.

In total 67.6% of the traders had attained secondary level education (51.4% "O" levels, and 16.2% junior secondary level). The least number of traders (8.1%) had not been to school. Thus, those with secondary level education were mainly involved in the trading of crafts along the highway. To sell crafts along the road, the trader had to negotiate prices with buyers some of who were tourists from outside the country so the trader had to know English. This was different from bark and fruit harvesting which was mainly done by those with low levels of education.

5.9.2 Wealth of harvesters

Based on wealth classes created with the assistance of the informants during group discussions (Annex 6), the level of use of baobab products by households in each wealth class was assessed. The results for Nyanyadzi and Jinga are presented in Table 15.

Table 15: Perceived % of households in each wealth class involved in baobab product use in Nyanyadzi and Jinga.

Wealth class	% of households involved in baobab use	Remarks
Nyanyadzi		
1-Richest	10%	Bought fruits for making ice lollies for sale. Bought finished mats for sale in urban areas or in South Africa. They could employ someone to do the selling for them. Consumed fruits as a snack, and preferred the sweet type which they bought from collectors.
2	21%	Wove crafts and also bought from other weavers. Most of the best weavers were found in this class. Might export crafts to South Africa but not bulk traders. Instead, sold crafts along the highway Some of them bought fruits to make ice lollies for sale. Hardly involved in direct debarking of fibre. Collected fruits for own consumption.
3	40%	Collected fruits for own use, sell along the highway and sold to bulk buyers. Stored some fruits in granaries for consumption during the off season. Did bark harvesting for own use and sale Wove attractive mats.
4-Poorest	29%	Harvested bark and fruit. Consumed a lot of fruits all year round and consumption increased during drought periods. Sold fruits along the highway, and also to bulk buyers like Kaite. Sold fibre to crafters. Might make small mats, not very immaculate designs.
Total	**100%**	
Jinga		
1-Richest	16%	Occasionally ate fruits. Picked or bought fruits for sending to relatives in urban areas.
2	19%	More like class 1 but ate a little bit more especially during drought periods. Used pulp in porridge.
3	20%	Harvested fruits mainly for own use and increased consumption of baobab fruits during drought periods. Sold some fruits to business people who made ice lollies.
4	22%	Ate a lot of baobab pulp in their porridge all year round.
5 – Poorest	23%	Consumed baobab fruits throughout the year, so they stock fruits at home. Sold sweet fruits to families in classes 1 and 2.
Total	**100%**	

Source: Group meetings with informants from Nyanyadzi and Jinga villages. 3/2/12 and 4/2/12 respectively

For Nyanyadzi there was active involvement of almost all the households, though wealth classes 3 and 4 (poor) were more prominent. However, during drought periods, classes 3 and 4 consumed the most fruit in the form of *mutandabota.*[67] For Jinga, five wealth classes were identified. Use in all classes was limited to fruit use for domestic use. Residents only harvested fibre when the need arose. Craftsmen were singled out as the only group that harvested baobab fibre which they spun into twine used to knit reeds together to make mats.

5.10 Marketing of baobab products

There are a number of ways in which baobab products were sold. Below is an account of how the products were sold, and a typology of the main actors involved.

5.10.1 Fibre harvesting and marketing

Fibre harvesting was a low-skill activity that required low cost technology; poor households were mainly involved in this activity (see Annex 6). To harvest fibre, an axe and hammer[68] were the main tools required. Harvested fibre was sun dried after which it was dyed by boiling it with bark from either *Berchemia discolour*, *Trichilia emetic*, *Securinecra spp*, *Acacia* pods, or carbon paper. Dyeing was done by the weaver who decided on the hue of the fibre in accordance with the design of the craft to be made.

Fibre harvesting was mainly done by men between April and November and was a laborious process. Most (65.2%), of the fibre harvesters used it themselves to weave crafts while the remainder (34.8%) was sold it to craftspeople at $.1/ bundle. The bark harvesters were typically learner crafters who made rudimentary and usually small mats sold along the highway. Established expert weavers*, Maduka,* who were the originators of new craft designs and made excellent crafts for the urban and export market were usually the buyers of the fibre. *Mhare* - the entrepreneurial craft weavers who melded craftsmanship with business acumen to earn a lot of money from the craft trade were also known buyers of fibre.

[67] This is a tangy porridge which can be eaten with little or no sugar or honey.

[68] Household ownership of axes and hammers is 88.6 % and 65.6 % respectively.

Fibre harvesting was prominent in Nyanyadzi where there was a booming crafts business. In Jinga it was limited to domestic use.

5.10.2 Fruits on the local markets

Sweet fruits were highly priced. They cost $1 for five or six fruits in both Jinga and Nyanyadzi. Marketing was opportunistic, reliant on travellers and tourists passing by. For craft traders, selling fruits was a form of diversification and could last until November as sellers drew on their strategic reserves in granaries. Ice lolly makers also provided a market for pulp (Box 2).

Box 2 Value addition of baobab fruits in Jinga

Mr. B, a teacher by profession, owned a general dealership shop at Jinga business centre. He bought baobab fruits from local residents and processed them into ice lollies. Ms. C, a widow who looked after three orphans from her late brother and sister, was one of Mr. B's regular suppliers of baobab fruits. Mr. B usually paid Ms. C in kind, for example food, and also helped her with money to cover emergencies. Mr. B sold the ice lollies locally. There was a high demand for the ice lollies during the hot season which sold at $.10 each. Per month Mr. B got $60. He sold the ice lollies from August to November which earned him about $260. Equipment needed to make the ice lollies were a deep freezer, moulding trays, and scoops for holding the ice cone. Ms. C got permission to harvest baobab fruit for sale from Mrs. D, the village head's sister.

5.10.3 Fruit sales on the open markets in urban areas

Bulk fruit traders from Nyanyadzi sold their fruit at open markets in cities, particularly in Mutare, Bulawayo, and Harare. In Mutare, crushed baobab fruits sold at $1 for a 5 litre gallon while uncrushed fruits sold at $3 per 20 litre bucket. To secure a vending site, the seller was supposed to have a hawkers licence or pay a daily charge of $1 to the Mutare City Council. ZANU PF party activists could also demand "protection fees" from the traders.[69]

5.10.4 Fruit sales to Private companies

Kaite Private Company also bought fruits from Nyanyadzi. Another company, Specialty Food Africa, used to buy pulp from Nyanyadzi but stopped in 2008. Kaite set up a processing plant at Birchenough Bridge, some 10km away and paid $0.1/kg uncrushed fruit and $0.2/kg

[69] This was a prevalent problem in all the cities in the country. The activists were allegedly runners for powerful land barons (see for example Legal matters: vendors, 2015).

crushed fruits.[70] The company had a mobile truck that purchased baobab fruits from fruit collectors in Nyanyadzi and provided sacks for packing. The company trained collectors on basic hygiene when processing the fruits and encouraged marginalized groups such as women to participate. To coordinate the marketing of the fruits at collector level, Kaite recruited local agents who were paid a commission.

5.10.5 Craft marketing

Crafts were sold along the highway, in shops, and in some permanent vending stalls, in cities and neighbouring countries. Selling of crafts along the highway had less transaction costs and were usually the entry point for novices (Box 3). Salaried staff also supplemented income using income from baobab products (Box 4).

Box 3: Importance of the local market

Mrs. E lived in Gudyanga village but she was originally from Bulawayo. She got married to Mr. D in 1995. At the time of her marriage, her husband was a general hand at a construction company in Bulawayo. However, three years after their marriage, the husband was retrenched. Mrs. E had to relocate to Nyanyadzi while her husband stayed behind to find another job. Meanwhile, Mrs. E started harvesting baobab fruits and bark for sale locally to fend for herself and their child. "I had never done it before but I had to do it. Life was tough." Soon, she learned from her Gumbu neighbour how to weave crafts from baobab bark and she switched from selling raw fibre to selling finished crafts along the highway. That brought her more money. On average, per year she sold $250 worth of crafts. Later on, Mr. D, having failed to secure a job, came back home and joined her to weave and sell crafts and baobab fruits. At the age of 15, the E's first-born child, joined his parents in the baobab trade. As a family, they now sold baobab products throughout the year. In 2012, the child was doing his final year of ordinary level education at a nearby Council school – his tuition being paid largely from income from the sale of baobab products. The family were able to buy sufficient food for their needs with their annual revenue from baobab products increasing to about $450.

[70] The percentage of fruit pulp is normally 16.5 percent. The shell constitutes about 45.5 percent of the weight of the fruit and the seeds compose another 38 percent of the total fruit weight (Kurebgaseka, 2005).

Box 4: Civil servants in baobab craft trade

Mr. F was a civil servant from Nyanyadzi, working at the Irrigation Scheme in the Department of AGRITEX. In 2008/2009, due to hyperinflation, his salary could hardly meet basic needs for his family. He embarked on marketing crafts made from baobab bark. He had never done that commercially before. To get started, together with his wife, he hired people to harvest bark from trees around their homestead.

He shared the harvested bark in half with the harvesters. The first time Mr. F wove 19 mats and took them to South Africa for sale. In total, he got a gross income of $450. He used $270 to buy basic groceries that were then in critical shortage in Zimbabwe. In Nyanyadzi, the family exchanged groceries with finished crafts. From this barter trade, they were able to buy over 25 mats. They went to South Africa on another selling expedition. On their second trip selling was much easier because they had already made contacts. They used their contacts as agents for selling the crafts. In return, the agents got paid with mats. After the second trip, the family went to South Africa every month end. What started as a desperate effort to eke out a living became a reliable lifeline. Soon they were able to buy household goods and then building material. By 2010 the young couple had built a brick house under an asbestos roof. Though the Zimbabwe economy stabilised after February 2009, the family continued to trade in baobab crafts with the wife undertaking most of the trips as Mr. F was now busy at work. With reliable cash income from baobab sales, Mr. F's wife supplemented her "Ordinary" level subjects and she passed and enrolled at a Teachers' training college.

5.10.6 Cross-border craft traders

Cross-border trade of fibre crafts started in the early 1990s. Since then it has been regarded as a key source of income with both men and women involved. Reportedly, there has been an increase in the number of young men and women involved while married women have focused on the local market. This increase has been partly due to the easing of visa requirements by the government of South Africa and also the ease of getting a Zimbabwean passport. From September 2010, it became cheaper ($57) and quicker to get a passport. Previously, a passport cost $140 and took about 3 months to be processed. With women, there were mixed sentiments about the merits of cross-border trading. Some had misgivings about cross-border trading based on moral and economic considerations.

5.11 Use of income from baobab products

Much of the income from baobab products was used to ensure a family's welfare with 87.3% used to buy food, and 10.1% to pay school fees (Figure 4). A small percentage (0.6%) of the income was invested in agriculture, a reflection of how risk averse and rational residents are in the face of unpredictable rain seasons.

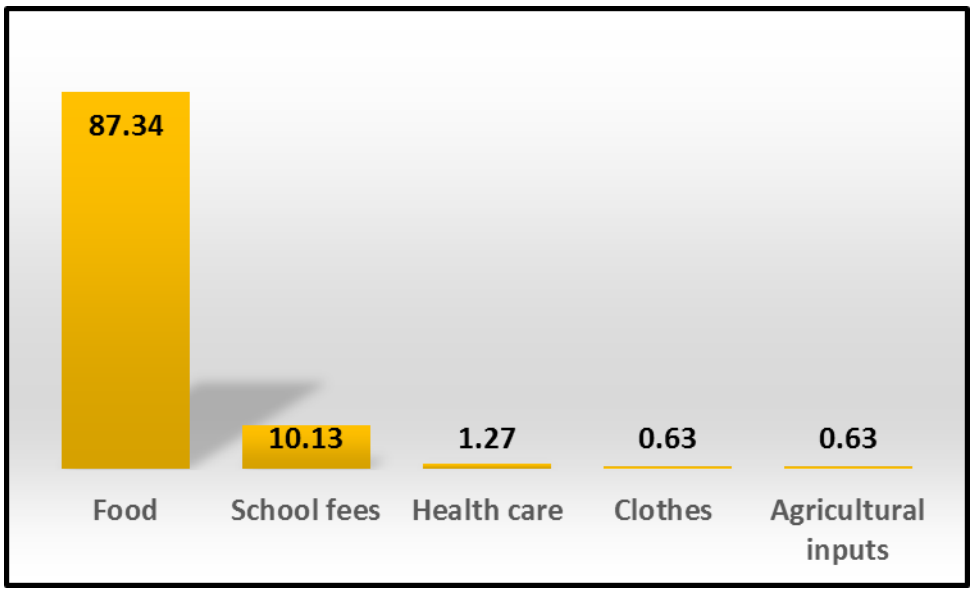


Figure 4: Use of income from baobab products

Source: Field survey, 2012

To make maximum benefit of the income from the sale of baobab products and circumvent the liquidity crunch in Zimbabwe, traders embarked on an innovative revolving fund scheme, called *mukando* (Box 5).

Box 5: Investment of income from baobab products-the case of *mukando*

Women dominate membership in these groups. Traders of baobab products form groups between five and ten members. Members agree on a periodic amount of money they each contribute to a group pool fund which is given to a group member on a rotational basis. When a member gets the money, it acts as a seed fund which the member can use to start up a business or expand an existing one. Over and above this revolving fund, groups can have a reserve fund. The money from the reserve fund can be loaned to group members and trustworthy members of the community at an interest of between 10-15 % per month. At the end of the financial year, group members equitably share profits from the interest generated. The motive of this revolving fund was aptly captured by Ms G., a member of a revolving fund in Nyanyadzi, who equated it to a very innovative crippled person who leans against the wall in order to dance. "If a woman earns a dollar she works so hard that she graduates from limping to spinning," she concluded. Investments from proceeds of *mukando* are modest and varied. Members have been able to refurbish houses, buy furniture, and start new businesses like broiler production.

Income from baobab products also served as a "launch pad" for some harvesters who switched to other livelihood options after acquiring some assets using income from baobab products (Boxes 4 and 7).

Box 6: Baobab income as a stepping stone.

Mr. H was one of the prominent craft weavers in Nyanyadzi. He rose to fame in 1998 after a provincial tabloid covered his success story as a talented craft weaver. In 1998, the Institute of Environmental Studies at the University of Zimbabwe invited Mr. H to Harare to attend an international workshop on the use of baobab. This opened up Mr. H's understanding of the potential of the baobab crafts. He scaled up weaving and because of the publicity he got, he was weaving for suave buyers from Harare and Mutare who paid him well for his crafts. To focus on weaving, he hired other villagers to supply him with fibre. Every month, he bought $20 worth of fibre. His wife helped with the dyeing of the fibre. In return, his monthly sales were over $150.

By local standards, his life improved remarkably. He built a modern big brick and asbestos house. But before he could finish the construction, the economic and political challenges began in the early 2000s. He couldn't get enough clients and he stopped weaving. He became a local agent for cattle buyers and sellers for which he got a commission. He has considered embarking on selling fruits to companies buying fruits but for now the cattle business is paying him well enough to survive.

5.12 Discussion

This chapter has highlighted the use patterns of baobab products in Jinga and Nyanyadzi. Jinga provides far fewer economic outcomes than Nyanyadzi, despite the abundance of baobab trees in the area and the proximity of the village to Nyanyadzi where a flourishing business in baobab fruit and crafts exists. Reasons for this difference are analysed in Chapter 7, within the context of existing customary practices and statutory forms of governance operating in the area.

Households in both Jinga and Nyanyadzi adopted a range of livelihoods strategies. This was a risk reduction strategy, especially as it hedged producer communities against risks associated with rain-fed crop production in this dry area. This was consistent with patterns for households in similar dry areas. According to Scoones (2009), households in dry areas adopt several livelihood strategies, or economic *bricolage,*[71] in order to reduce risks.

Natural resources, particularly water and forests, were of unequivocal importance in both Jinga and Nyanyadzi. The potential contribution of baobab products to local livelihoods can best be discerned by looking at results from Nyanyadzi where use of fibre and fruits has been happening for a long time (since the 15th century). Increasingly, more households in

[71] French term "making do with whatever is available".

Nyanyadzi now harvest or process baobab products throughout the year as shown by over 54 % of the households reporting harvesting baobab fibre throughout the year in 2011. To put this into perspective, earlier research in Nyanyadzi recorded that only one family was involved in the marketing of fibre crafts throughout the year (Mukamuri & Kozanayi, 1999). The increase in the number of households harvesting baobab products throughout the year is confirmation that the sale of baobab products provides crucial income. Within the baobab value chain, stakeholders exhibited multi- dimensional and complex livelihood activities that included selling of crafts, fruits, crop production, involvement in cash revolving fund clubs (*mukando*), and three-point trading (Box 4). Put together, these activities guarantee cash income to many residents. Two questions that arise relate to the roles of statutory and customary forms of governance in influencing the level of produce harvested, and resultant the ecological impacts? These two questions are further elaborated in Chapters 6 and 7.

5.12.1 Income from baobab products

Dependence on baobab products in the study site was high with over 53 % of households reporting harvesting in 2012. With the average annual income from baobab products per household in Nyanyadzi at $233, it means that baobab products alone contributed 40 % of the total income of the lowest annual household income ($500). [72]

In Jinga, the average revenue per household from baobab products in 2011 was $33. To contextualise this, in 2014, the average total annual income was $114 for a rural household in Manicaland Province (ZimVAC, 2014). Thus, households in Nyanyadzi secured more than the average income per household in the province in 2014. These results compare well to results from other studies. For example, a global survey by Angelsen *et al.,* (2014) on forest incomes found that environmental income accounts for 28% of total household income. Regionally, income from non-farm activities in sub-Saharan Africa ranges from 30-50 % of total income (Ellis, 1998b). Wynberg & Laird (2007) found an annual income from Marula of between $15 and $166 per household while Shackleton and Shackleton (2004) suggest annual income of between $86 and $1, 034 as the total contribution of NTFPs to households in South Africa. In Zimbabwe, Sola (2004), reported an annual household income of $21 from NTFPs.

[72] It was beyond the scope of this study to look at the total income from all forest related products as other surveys have done (Cavendish, 2000; Campbell *et al.,*2002b).

The income from the sale of natural products such as baobab products is thus clearly a significant supplementary source of cash to meet diverse needs (Campbell *et al.*, 2002b; Shackleton, 2015). A look at the expenditure patterns of income from baobab products in Nyanyadzi clearly showed this - as much as 87.3% of the income is spent on food, and 10.1 % is spent on tuition for children. Investments in immovable assets have also been noted (Boxes 4 and 7). This gives currency to Welford and Breton's (2008) assertion that the utilisation of baobab products has potential to stimulate local and national economies in producer communities.

Dependence on NTFPs in the dry regions like Nyanyadzi is expected to rise in the study site as climate change is projected to increase the severity and frequency of droughts in low-lying areas of Zimbabwe where baobab trees are found (Sanchez *et al.*, 2010). In the face of climate change, NTFPs have been recognised as a mechanism to cope with crop failure.

5.12.2 Subsistence use of baobab products

In the same vein, local consumption needs consideration especially insofar as it meets the nutritional requirements of the harvesters who live in the dry areas where most baobab trees are located. While NTFPs have been looked at largely as economic resources (Jagger *et al.,* 2014), Wynberg *et al.* (2015) argue that NTFPs contribute to local livelihoods through local use and trade. Baobab fruits, for example have been valorised as a superfruit for the Western markets which has given rise to questions of their impact on subsistence activities in producer communities. Results from both Jinga and Nyanyadzi, show that households do a sizeable amount 5.2 (+4.5) buckets of fruits per year for home consumption. In Jinga, households also keep a sizeable amount of baobab fruits for household consumption. This is in contrast to South Africa where Welford *et al*. (2015) noted that the domestic use of baobab fruits is on the decline due to the modernization of food products. Woittiez, *et al.* (2013) estimated that indigenous fruits contributed to 20.0 % of the energy intake of wealthier farmers in Zimbabwe and to some 40.0 % of the energy intake of poor farmers in years of inadequate rainfall.

5.12.3 Who is harvesting baobab products?

Evidence from this study shows that both the poor and those better off rely on baobab products. A diversity of people from Nyanyadzi are using baobab products. Some harvesters were formally employed while others were retrenchees. Furthermore, some households and individuals used trade of baobab products as a stepping stone to better opportunities. For example, Messers. F and H, both ended up pursuing other livelihood opportunities after raising start-up capital from the sale of baobab products. Results from this study support the popular view that NTFPs are a safety net for the poor and suggest that households use forests as a source of income (Angelsen & Wunder, 2003; Shackleton & Shackleton, 2004; Fisher & Shively, 2005).

When education, a variable that has been noted to influence NTFP use patterns (Ellis, 2000), was considered, it was noted that it does not seem to have a strong influence on harvesting patterns of baobab products. However, the more educated people were more likely to participate and benefit from the marketing of baobab products. It is postulated that this development is informed by the absence of the middle class in Zimbabwe at the time of the research, due to hyperinflation. Jones (2010), aptly characterised the Zimbabwean economy at the time of the survey as the "*kukiya kiya* economy" to denote the various "making do" activities that everyone, including the middle class, embarked on in order to survive. This contradicts the strong evidence in literature that points to the trend that the poor are disproportionately depend on forests (Belcher *&* Hogarth, 2005; Cavendish, 1997; 2000; Campbell *et al.*, 2001; Belcher & Hogarth, 2013). Recent research in China by Belcher & Hogarth (2013) on the commercial harvesting of bamboo, revealed that high-income households had the highest absolute bamboo income, but low-income households had the highest dependence on bamboo income. Cavendish (2000) came to a similar conclusion after carrying out a detailed household survey in Zimbabwe.

The harvesting of baobab products is unique in that little investment is needed by poor households to enter the fruit and fibre markets. Thus, chances of elite capture, which is of concern when communally-owned resources are commercialised (Dovie, 2003; Buchmann *et al.*, 2010), has not been a serious problem in Nyanyadzi despite years of commercial harvesting. The deliberate targeting of marginalised groups like women and the poor as

suppliers of baobab fruits by buyers, and the fortuitous location of baobab trees around homesteads which gives owners exclusive rights, has helped curb elite capture. Furthermore, the accessibility of the study site (a major highway passes through the area), means even poor people can easily access the market for both fruits and crafts. In the case of fruit selling, the fact that Kaite, the main buyer, buys the produce at farm gate and has a processing plant less than 15km away, means reduced transactional costs to the fruit harvesters. The use of ethnic ties (Kozanayi *et al.,* 2014) even by the poor who are normally disadvantaged (Wynberg & Laird, 2007; Cerutti *et al.,* 2012) when communally-owned products are commercialised, helps to ensure an equitable distribution of benefits.

Nevertheless, evidence in Nyanyadzi of the adroit use of financial and physical assets and political connections to access more natural resources and cheap labour by the rich were noted. Those who have been involved in the craft sector, for example expert weavers *(maduka* and *mhare)*, capitalise on their social connections with buyers and their ability to weave beautiful crafts to earn more money than others. The nuances on how the various resource harvesters negotiate their ways in harvesting and marketing baobab products and how existing forms of governance inform these strategies is further elaborated in subsequent chapters.

In Jinga, largely due to local rules that do not allow for the commercial selling of baobab fruits, as well as the Garwe's own preferential tastes for other livelihood options like beekeeping, income from baobab products is low relative to Nyanyadzi. In that sense, Jinga portrays a case of customary systems and cultural preferences making local people pursue certain economic activities and not others.

5.13 Conclusion

This chapter has presented background information about the study, highlighting the socio-economic characteristics of the area. The chapter has also presented results on the use pattern for baobab products in the study in terms of the quantities and value of harvested products. The expenditure pattern for the income from baobab products is also explained, with the major finding being that most households spend their income on food and education. Chapter 6 describes the ecological impact of harvesting different baobab products while

Chapter 7 will engage with the nuances used in both Nyanyadzi and Jinga to regulate access to baobab products.

CHAPTER 6: THE ECOLOGICAL IMPACT AND SUSTAINABILITY OF BAOBAB BARK HARVESTING WITHIN DIFFERENT LAND TENURE SYSTEMS IN THE CHIMANIMANI DISTRICT OF ZIMBABWE

6.1 Introduction

This chapter interrogates synergies and discords between customary and statutory forms of governance, and the consequences of that interface with regard to baobab use and ecological sustainability. Ecological sustainability is understood to mean that the resource is able to sustain pressure in perpetuity at the current rate of harvesting (Venter, 2012). Sustainable utilisation is the level of harvesting that does not impair the ability of the harvested population to replace itself - that is, the rate of harvest should not surpass the rate of regeneration (Mutenje *et al.*, 2010). The ecological sustainability of natural resources may depend on the tenure of the resource and the land on which it is found (Bruce *et al.*, 1993). The three property regimes identified by Shlager and Ostrom (1992), namely private, communal, and state, were used as the basis for analysis. Baobab trees are found in all three tenure systems and customary practices are used to regulate their use in all three systems, although the degree of use differs and is typically most pronounced in communal property (Bruce *et al.,*1993) and less so in state-owned property.

The key question addressed in this chapter is how sustainable are the harvesting practices under different tenure systems in the study site? The research question was underpinned by the following more detailed questions for each of the three tenure systems:

1. What are the fruit and bark production levels of the trees?
2. What are the harvesting patterns?
3. What is the prevalence of black soot disease?
4. What factors affect the fruit and bark production of trees?

To answer the above research questions, a number of variables that impinge on ecological sustainability were analysed, including fruiting patterns and bark collection trends. This chapter also draws on product users' and experts' perceptions regarding the sustainable use of baobab trees.

6.1.1 Non- Timber Forest Products (NTFPs) and governance

Use of NTFPs is gaining momentum with the emergence of markets for natural products in the global West. Drawing on Neumann and Hirsch's (2000) extensive work on NTFP commercialization, there are three responses to commercialization that can be discerned. These include (1) intervention by the state and its takeover of local management roles; (2) improved management as actors are incentivised to manage a resource from which they draw benefits and; (3) resource degradation if existing rules weaken. While the need to govern natural resources is imperative, the question of what governance model to use remains a challenge.

6.1.2 The role of NTFPs in driving livelihoods in Southern Africa

Southern Africa is predominately arid or semi-arid, with mostly infertile soils (Frost & Mandondo, 1999). While this limits agricultural potential, agriculture is still the main source of livelihood for the more than 200 million peasant farmers living in rural areas in the region (Mubaiwa, 2004; World Bank, 2007). Consequently, the majority of rural people harvest forest resources for subsistence and commercial purposes (Cavendish, 2000; Campbell *et al.*, 2001). NTFPs are extensively used by local communities in southern Africa (Campbell & Luckert, 2002; Shackleton & Shackleton, 2004; Wynberg, 2004; Shackleton, 2015; Musemwa *et al.,* 2017), and include all biological materials other than timber, extracted from natural forests or savannahs for human use. These include parts of individual plants such as leaves, bark, fruits, and latexes, or parts of the populations' life cycle, such as seeds, flowers, caterpillars and eggs (Mudavanhu, 1998; Belcher, 2003). Low-income farmers may earn 10 to 25 % of their household income from NTFPs (Cavendish, 2000; Campbell *et al.,* 2002b; Scherr *et al.*, 2002; Belcher *et al.*, 2005). At a global level, the contribution of NTFPs is massive. In 2003, for example, the global market of herbal medicines stood at US$60 billion per year (WHO, 2003). FAO (2014) indicated that the global trade in forest products per year is $225 billion of which NTFPs contribute about $77 billion.

Local people have harvested and used NTFPs over hundreds of years, although contemporary harvesting appears to be driven by economic considerations (Jagger *et al*., 2014; Cavendish, 2000; Sola, 2004; Shackleton & Shackleton, 2004; Shackleton *et al.*, 2007). NTFPs also fulfil an

important cultural and health needs for many populations (Barany *et al,* 2004; Cocks *et al.*, 2006; Cocks *et al.,* 2012; Cocks *et al.,* 2016).

While most people in rural areas harvest NTFPs, this share decreases as total income rises, suggesting that it is poorer people who are most involved in NTFP activities (Schreckenberg *et al.*, 2006). It has also been argued that that households are poor because they harvest NTFPs (Neumann & Hirsch, 2000: 35-36). As stated by Neumann and Hirsch (2000:37), poor households embark on NTFPs, "not in order to accumulate, but merely to survive", and that given an opportunity, people involved in NTFP extraction will opt for other income generating activities (Neumann & Hirsch, 2000). In that sense, it is argued that NTFPs serve as a stepping stone for households as they embark on other more lucrative livelihood options.

6.1.3 Ecological impacts of using NTFPs

The baobab is an interesting case because of the growing demand for its products which might result in over exploitation of the resource base and marginalization of more vulnerable groups in society (Welford and le Breton, 2008). NTFP Harvesting for subsistence use has generally been considered ecologically sustainable due to the perceived benign impact of harvesting on the species and ecosystem (Schreckenberg *et al.,* 2000). However recent studies show otherwise (Dhillion & Gustad, 2004; Ticktin, 2004). In particular, Ticktin's (2015) review of 70 studies shows that harvesting can indeed have profound effects. Commercial harvesting of medicinal plants (Sunderland *et al,* 2004), palms in southern Africa (Cunningham & Terry, 1993), as well as charcoal (Ribot, 1998) have been found to have a significant impact on the resource's ability to reproduce. However, little is known about the ecological consequences of harvesting plant exudates such as gums, barks, roots and bulbs, as well as fruits which represent a large proportion of commercial, wild-harvested species (Ticktin, 2004). Some studies have however been done on medicinal plants (Peters, 1994; Cunningham, 1993).

6.1.4 The Baobab tree as an emerging NTFP

NTFPs have recently started to play a key role in national and global economies with the last three decades seeing local people, NGOs and the private sector embarking on a concerted

effort to commercialise NTFP use (Mutasa, 2008), to enhance rural development (Schreckenberg *et al.*, 2006). Such commercialization is also seen as an incentive to promote conservation due to the perceived benign ecological impacts of NTFP extraction (SAFIRE, 2007). At a regional level, the SADC Protocol on Forestry, through the Forestry Sector Technical Coordination Unit, recommends commercial utilisation of natural products in the region on the premise that, "promotion of innovative forest resource utilisation technologies will generate income for small holder farmers and reduce forest destruction" (Mubaiwa, 2004: 31). Among its target NTFPs, the SADC Protocol on Forestry cites and promotes baobab fruit juice production as an example of a successful commercialised NTFP (Mubaiwa, 2004). With reference to commercial use of the baobab, Mutasa (2008) proffers the existence of a ready market both locally and externally as the reason for the fast growth of the baobab products industry. The recent granting of Novel Foods status in the European Union (OJEU, 2008) and the Generally Regarded As Safe (GRAS) (www.foodmanufacture.co.uk, accessed 2/6/2010) status in the USA have opened up new and bigger markets for baobab products. The Overseas Development Institute (ODI), (2006), has projected that the European market could initially generate more than US$750 million annually for producer countries in southern Africa from baobab products per year, making it the highest earner of all traded NTFPs in southern Africa (RTFP, 2007). With increased volumes, this annual income could rise to an estimated $1 billion, benefiting over 2.6 million people along the marketing chain (RTFP, 2007).

6.1.5 The taxonomy and distribution of the baobab tree

The baobab tree, known also as 'the upside-down tree', Senegal calabash, Cream of tartar, monkey bread tree, tree of life (Pettigrew *et al.,* 2012) and Ethiopian sour gourd, is one of the most distinctive and useful trees in the African landscape (Sidibe & William, 2002). It belongs to the family Bombacaceae and genus *Adansonia*. The family has about 30 genera, and about 250 species (Palgrave, 2002; Assogbadjo, 2006). The tree reportedly can survive up to 5 000 years (Sidibe & William, 2002; NRC, 2008). The name *Adansonia* was given to this tree to commemorate the French surgeon Michel Adanson (1727-1806) who had been to Senegal in the 18th century and was the first to attempt to age the baobab and describe it (Adanson,

1771). The specific name, *digitata* meaning hand-like, is in reference to the shape of the leaves.

There are seven species of baobab in the genus *Adansonia*, while a new diploid species, *Adansonia kilima* which co-exists with *A. digitata* has recently been discovered (Pettigrew *et al,* 2012). However, only one species, *Adansonia digitata* L. is found in Zimbabwe. The centre of origin for the genus is believed to be Madagascar where all seven species are found (Machingambi, 2007). Southern African *Adansonia digitata* is usually found in the dry parts of the savannah (Mudavanhu, 1998; Sidibe & William, 2002, Wickens & Lowe, 2008) although it also occurs in forest areas. Outside of mainland Africa, the species is primarily associated with human habitation (Sidibe & Williams, 2002; Pock Tsy *et al.,* 2009). In Zimbabwe, the trees are found in low potential agricultural areas (Mukamuri & Kozanayi, 1999; Mullin, 2003). The distributional pattern of the baobab in Africa and Zimbabwe is shown in Figures 5 and 6 respectively.

The International Centre for Underutilised Crops has identified *Adansonia digitata* as among the top ten agroforestry tree species to be conserved and domesticated in West Africa (Sidibé & Williams, 2002), while the National Research Council (USAID) has identified it as one of the "lost crops" of Africa on account of the tree's promise for improving the quality of life in the Earth's poorest regions (NRC, 2008).

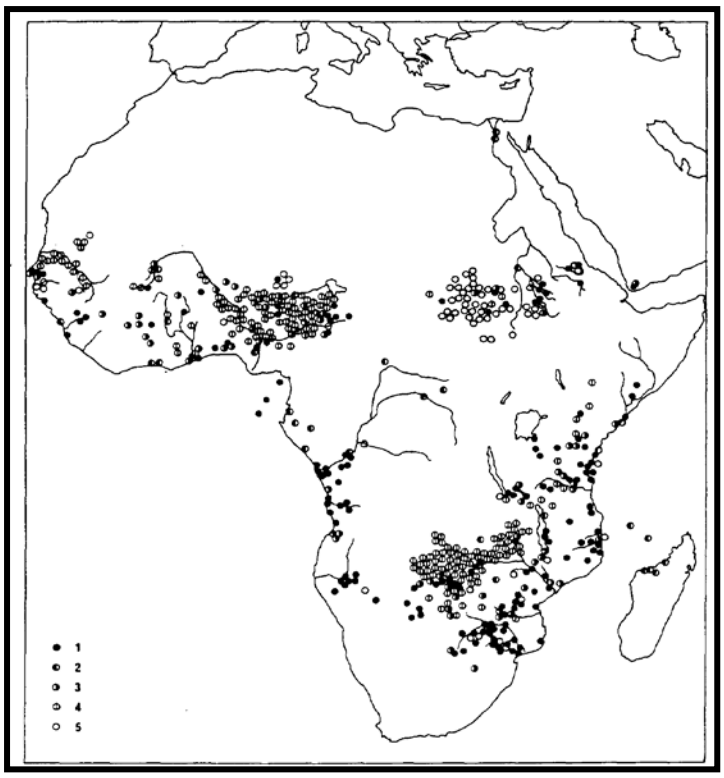


Figure 5: Distribution of *Adansonia digitata* in Africa and neighbouring areas based on 1. Herbarium and flora records. 2. Specimens known to be cultivated or introduced. 3. Distribution based on published photographs. 4. Distribution based on KEW "baobab survey" information, 5. Records obtained from travel [literature, maps etc. Source: KEW Bulletin No. 37 (2)]

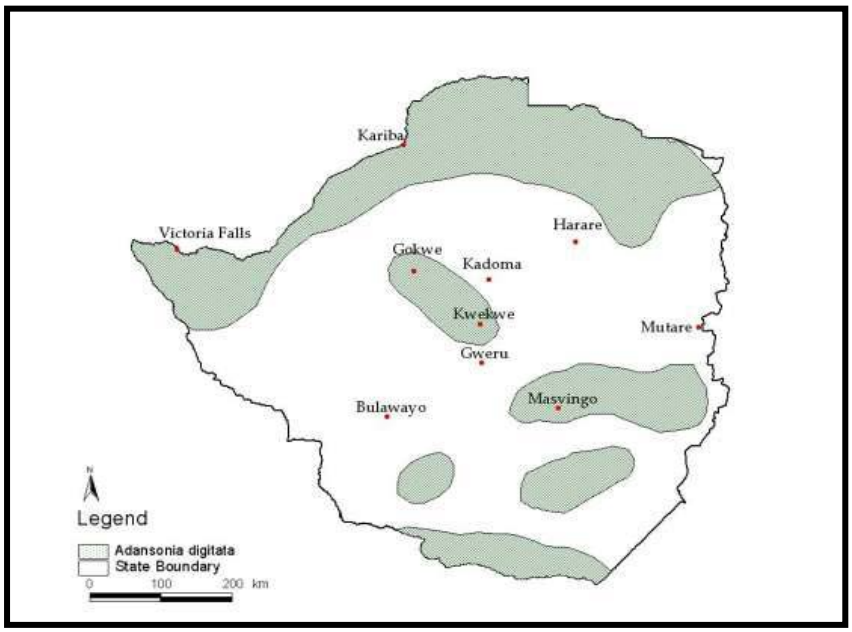


Figure 6: Baobab distribution in Zimbabwe [Source: Phytotrade Africa, 2007]

A number of baobabs with historical importance exist in Zimbabwe (Mullin, 1997 & 2003). In Chimanimani, for example, these include *Muuyu weburi*-the hollow baobab near Biriwiri, and the Traveller's Tree near Birchenough Bridge. Both trees were used in the early 1930s as resting places for travellers waiting for transport. Their hollow centres could accommodate up to 30 men. The magnificent Twin Gateway to Gazaland baobabs near Birchenough Bridge are also famous (Mullin, 2003). Nearby, in Devuri Range, is what is believed to be the biggest baobab tree in Zimbabwe with a girth of 27.61 m and a height of 21m (Wickens & Lowe, 2008).

6.1.6 Black soot disease in baobab trees

Black soot disease was a source of concern to conservationists and to local people (Matose & Clarke, 1993). The disease has been extensively researched by academics (de Villiers, 1951; Calvert & Sharp, 1991; Matose & Clarke, 1991; Piearce *et al.,* 1994), and reported by the media (Baobab disease puzzles: 2004). Black soot is a fungal disease threatening the baobab tree, and consequently, livelihoods and economic opportunities. However, there was no consensus about its cause and effects. Some pathologists regarded it as a secondary opportunistic fungus infection arising from a physiological disorder (Sharp, 1993), while others claimed that it was an indication of trees succumbing to secondary infection due to various forms of stress, including excessive debarking (Matose & Clarke, 1993; Piearce *et al.,* 1994; Mudavanhu, 1998) or lengthy periods of below-average rainfall Piearce *et al.*, (1994). Mudavanhu (1998) asserted that the soot causing pathogens can be spread by tools used to harvest fibre. Debates rage on about the fate of the affected trees with local people and the FC claiming that the trees will eventually succumb, though there is contrasting evidence of trees reportedly recovering after infection (Piearce*, et al.,* 1994).

Extensive research on the chemical and nutritional value of baobab products (Nour *et al*, 1980; Ikemefuna & Amaechi, 1992; Ramadan *et al.*, 1994) has also been undertaken. These analyses have shown that baobab fruits are highly nutritious. They contain six times as much vitamin C as oranges, twice as much calcium as milk, and plenty of B vitamins, magnesium, iron, phosphorous, and antioxidants (Chadare *et al.*, 2009)

6.1.7 Governance of baobab tree and property rights

In the majority of cases, baobab trees are found in communal grazing areas where their use is subject to contestation by resource users. Oftentimes, customary practices are used to regulate domestic use while, like most natural resources, the state tends to get involved when the tree is used commercially (Nemarundwe, 2003; IIED, 2009). For natural resource harvesters having access to the resource is critical.

Access is about resource tenure (Bruce *et al.*, 1939). As argued by Quan, (1998), secure access to the resource is a basis for sustainable ecology and livelihoods. In the new 'institutionalism', common pool resources are goods which are used simultaneously by different users largely because of the difficulties in enforcing exclusion rights (Ostrom, 1990). When the rights and duties of the different resource users are clearly defined, they become communal property resources (Ostrom, 1990). Under this regime every member of a defined community has user rights. Table 16 presents the four types of common property resources found under common pool resource use.

Table 16: Types of property rights regimes in common pool resource use

Property rights regime	Characteristics
State property	The state has the right to determine use and access rules. Individuals have a duty to observe use and access rules that are instituted by the state
Private property	Individuals have the right to undertake socially acceptable uses and have the duty to refrain from socially unacceptable uses. The individual or corporate property owner has the right to control, lease, rent and transfer ownership
Common property[73]	A clearly defined group (owners) has the right to exclude non-members and the non-members have a duty to abide by the exclusion. Individual members of the group have both rights and duties with respect to use and maintenance of the resource owned.
Open access	There is no specific group of users or "owners" and thus the benefit stream is available to anyone. Individuals have both privilege and no right or duty with respect to use and management of the resource.

Source: Adapted from Nemarundwe (2003).

[73] Most of the natural resources in the developing world fall under the category of communal property (Ostrom, 1990).

While the above categorisation is appropriate to analyse rights and duties of resource users, it has been found that property rights are more complex than portrayed above. In practice, natural resources are managed and used under different property regime (Hara *et al.*, 2009). Bruce *et al.* (1993) offered a more detailed typology of tenure systems than the above four. They noted that tenures are not that discrete but overlap and that there are *de facto* land tenure systems that involve a multiplicity of actors engaged in struggle over property rights. If one examines the territory of a single community where land is governed by indigenous tenure, one finds the landscape is divided into a mosaic of land under different uses and tenure systems. Each area or mosaic constitutes a tenure niche, that is a space in which access to and use of it is governed by a common set of rules. These tenure systems are neither static nor simple (Bruce *et al.*, 1993), they change over time and under different management systems e.g. with weak management systems in place, state property can become open access or communal property (Ostrom, 1990). Customary systems are used in all tenure systems, though the degree of use differs and is often most pronounced in communal property (Bruce *et al.*, 1939) and less so in state owned property. Generally, a positive relationship exists between granting of tenure rights and access to benefits by the right holder. However, as Ribot and Peluso (2003) show, power and not access rights, may be the key in determining the volume and direction of benefit flow.

6.2 Results

The baobab production capacity under different tenure systems was assessed by measuring tree size, and fibre and fruit production levels. The results of the assessment are presented in the sections below.

6.2.1 Tree sizes

The average tree height across all three tenure systems was 13.6 m (±4.9m), with an average diameter at breast height (DBH) of 5.8m (±3.1m) (Table 17). There were no significant differences in tree height across the three tenure systems ($n=244$, $F=2.611$, $p>0.05$). No significant differences were noted in DBH between privately-owned and communally-owned trees although there were significant differences in the DBH between privately-owned and state-owned trees ($n=244$, $F=4.607$, $p<0.01$).

Table 17: Average values (±s.d.) for baobab tree height, diameter at breast height (DBH) and number of fruits.

Tenure	No. of trees	Tree height (m)	DBH (m)	No. of fruits
Private	106	14.2(±5.4)[a]	6.3(±3.2)[a]	109.2(±259.4)[a]
Communal	80	13.9(±4.7)[a]	6.0(±3.3)[a,b]	69.3(±100.3)[a,b]
State-owned	58	12.4(±4.5)[a]	4.7(±2.6)[b]	23.3(±40.9)[b]
Total no. of trees	**244**			
Mean		**13.6(±4.9)**	**5.8(±3.1)**	**75.9(±179.5)**

Values were taken from trees in three different tenure systems in the Chimanimani District. Differences in average values for each variable were determined by ANOVA and a Tukey post-hoc test. Dissimilar superscripts denote significant differences at $p<0.05$.

The difference in tree height between Jinga and Nyanyadzi was insignificant ($n=186$, $t=1.76$, $p>0.05$) (Table 18). However, there were significant differences in tree diameter between trees in Jinga and Nyanyadzi ($n=186$, $t=2.49$, $p<0.05$). All the three tenure systems are found in Jinga and Nyanyadzi. Baobab tree density is similar in both villages.

Table 18: Average values (+s.d) for baobab tree height, diameter at breast height (dbh) and number of fruits.

Area	No. of trees	Tree height (m)	DBH (m)	No. of fruits
Jinga	52	15.5(±6.5)[a]	7.1(±3.7)[a]	154.0(±191.3)[a]
Nyanyadzi	134	13.5(±4.4)[a]	5.8(±3.0)[b]	68.0(±210.1)[b]
Total no. of trees	**186**			
Mean		**14.0(±5.1)**	**6.1(±3.3)**	**92.0(±208.1)**

The values were taken for trees from Jinga village and Nyanyadzi. Differences in average values for each variable were determined using Student's t-test. Dissimilar superscripts denote significant differences at $p<0.05$.

6.2.2 Number of fruits

Average annual fruit production per tree was 75.9 (±179.5) fruits (Table 17). Privately-owned trees produced significantly more fruits than the trees on state-owned land ($n=244$, $F=4.229$, $p<0.05$). There was no significant difference in the number of fruits per tree between privately-and communally-owned trees.

Trees within the Nyanyadzi cluster produced significantly fewer fruits per tree (68.0 (±210.1)) than in Jinga 154.0(±191.3) (n=186, t=2.569, p<0.05) (Table 18). By comparison, Jinga trees produce 226.5% more fruit than the least-producing areas in Nyanyadzi.

6.3 Harvesting dynamics

6.3.1 Bark harvesting on trunks and branches

Bark harvesters began debarking at least 30cm above the ground, and when the entire trunk was debarked, they also removed bark from the branches. To reach the top parts of the tree trunk and branches, bark harvesters used stilts or scaffolds. Sometimes the scaffolds reached heights of up to 6m.

6.3.2 Intensity of debarking

Across the three tenure systems each tree was debarked on average 2.7 (±1.8) times (Table 19). Trees on privately-owned land were harvested the least number of times at 2.3 (±1.8), with trees on state-owned land harvested the most at 3.8 (±1.8) times. There were no significant differences in the frequency of harvesting between trees on privately-owned and communally-owned trees, although both tenure systems differed significantly from state-owned trees in terms of the number of times that debarking had occurred (n=244, F=13.754, p<0.001).

There was a significant difference in the number of harvests between Jinga and Nyanyadzi, with trees in the former harvested 0.4 (±0.6) times compared with 3.1 (±1.4) times for the latter (Table 5) (n=186, t=13.637, p<0.001).

6.3.3 Area harvested

An average of 0.33m^2 (±0.20m^2) was debarked from each tree per bark harvesting session (Table 19). There were no significant differences in the area debarked for private- and communally-owned trees. However, state-owned trees differed significantly from the two other tenure systems with a greater area debarked of 0.4m^2 (±0.9m^2) (n=244, F=6.307, p<0.01).

6.3.4 *Years since last harvest*

This variable indicated the period given to a tree to recover from debarking (Table 19). Between the three tenure systems, trees were debarked within two years of the last debarking 2.0 (±2.4). There were no significant differences between the years since harvest across the three tenure systems (Table 19) (n=244, F=2.392, p>0.05).

Table 19: Average values (±s.d.) for bark harvesting and its impact on baobab trees for three different tenure systems in the Chimanimani District.

Tenure	No. of trees	No. harvests	Total area of fresh harvest (m^2)	Years since last harvest
Private	106	2.3 (±1.8) [a]	0.30 (±0.20) [a]	2.3 (±2.6) [a]
Communal	80	2.6 (±1.6) [a]	0.32 (±0.19) [a]	1.5 (±1.6) [a]
State-owned	58	3.8 (±1.8) [b]	0.40 (±0.16) [b]	2.0 (±2.9) [a]
Total no. of trees	**244**			
Mean		**2.7 (±1.8)**	**0.33 (±0.20)**	**2.0 (±2.4)**

Differences in average values for each variable were determined by ANOVA and a Tukey post-hoc test. Dissimilar superscripts denote significant differences at p<0.05.

6.3.5 *Impact of bark harvesting on the tree trunks*

In both Jinga and Nyanyadzi, bark harvesting had significant impacts on tree trunks in communal areas and on state-owned lands. In these two areas trees were debarked more than one rung up the trunk, up to 6m. Tree branches were also debarked (Plate 1). Trees on private lands were also debarked up to more than one rung, but 39.9% of the trees had not yet been debarked.

In Nyanyadzi, the trees surveyed showed signs of mild to severe debarking. Only 0.8% of the trees in the area had not been debarked at all while 15.7% had been debarked only once. Most (83.5%) of the trees had been debarked more than once. It was observed that trees in communal areas close to the residence of the Ward Environmental Management Committee chairperson in Nyanyadzi had not been debarked. Beyond the vicinity of the chairperson, trees were severely debarked, suggesting that monitoring of bark harvesting was weak.

In Jinga, there was nil to mild debarking. A total of 61.5% of the trees in Jinga had never been debarked, while the remainder (38.5%) had only been debarked once.

6.3.6 Impact of bark harvesting on branches

Trees in communal areas in Nyanyadzi were generally debarked up to the branches (Table 20). On private and state-owned lands, debarking of branches was insignificant. Debarking of branches for fibre in the study site was a new phenomenon, not reported in previous studies (Mudavanhu, 1998; Mukamuri & Kozanayi, 1999; Romeo *et al.,* 2001). In Jinga there was no evidence of debarking at branch level.

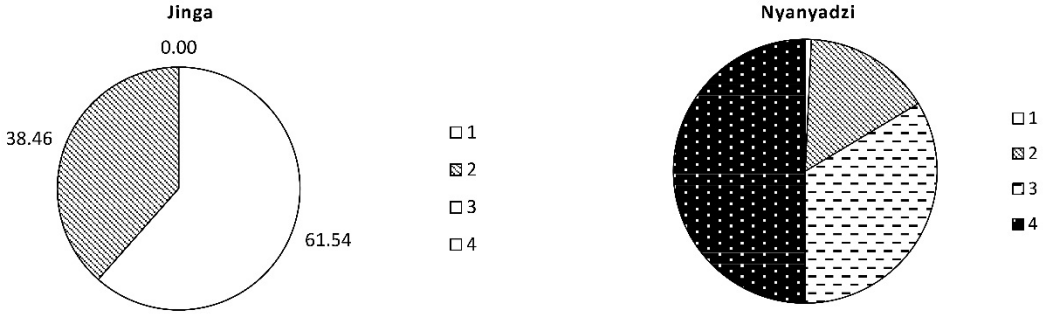
Values taken for trees in Jinga and Nyanyadzi, in the Chimanimani District. Explanations for the different index value categories are explained in Table 2, Chapter 3. The proportion of trees in each category within each tenure system is shown.

There were significant differences between Jinga and Nyanyadzi and the impact of baobab bark harvesting on stems ($n=186$, $df=3$, $\chi2=130.32$, $p<0.001$); branches ($n=186$, $df=2$, $\chi2=13.33$, $p<0.01$); and the provision of fibre ($n=186$, $df=2$, $\chi2=96.02$, $p<0.01$) (Table 20). However, the index of tree health did not differ between tenure systems ($n=186$, $df=2$, $\chi2=2.61$, $p>0.05$).

In Nyanyadzi and College (a state-owned area), just a small number (less than 10%) of trees were still able to provide good quality fibre. The bulk of the trees produced poor quality fibre which was an indication that the trees had been debarked several times. However, in Jinga the bulk of the trees appeared to still be producing good quality fibre. Despite there being little debarking taking place in Jinga, there was an almost similar number of trees producing very poor-quality fibre. This anomaly is explained by the fact that black soot disease is one of the factors that contributes to fibre quality, and occurred in baobab trees in an idiosyncratic fashion. Even trees that were benignly debarked were prone to infestation by the disease, for example in Jinga village.

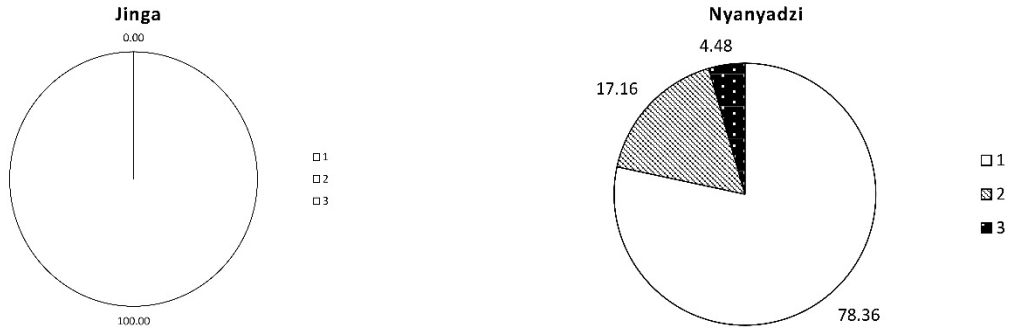
Table 20: The impact of baobab bark harvesting on (a) stems, (b) branches, (c) fibre provision and (d) tree health.

STEMS



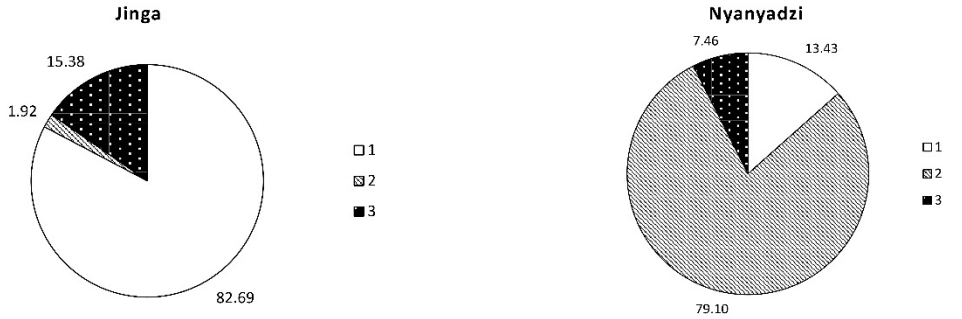
Impact of harvesting on stems: **1**: Nil - not debarked at all; **2**: Mild - not debarked all round; **3**: Severe - debarked all round; **4**: Very severe - debarked more than one rung

BRANCHES



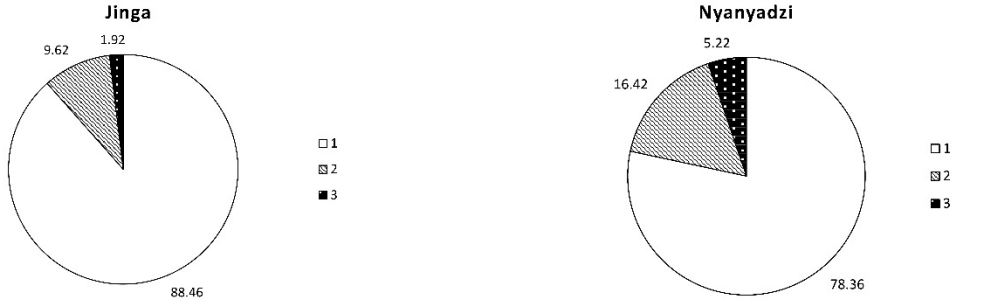
Impact of harvesting on branches: **1**: Nil - not debarked at all; **2**: Mild - not debarked all round; **3**: Severe - debarked all round

FIBRE



Ability to provide fibre: **1**: Good - provides good quality, first-cut fibre (mutangguro); **2**: Poor - second-cut fibre (mupindwa); **3**: Tree cannot be used for fibre for example diseased, hollow or rugged surface

TREE HEALTH



Index of health: **1**: Good - no black soot disease; **2**: Poor - early signs of black soot; **3**: Very poor - the whole tree has black soot disease

6.3.7 Tree health

The health of the tree, as defined by the level of infestation by black soot disease, was of concern to resource harvesters and managers alike. For harvesters, bark from diseased trees could not be used for commercial purposes, while the number of fruits per tree reportedly decreased with an increase in black soot infestation. Locals and the EMA and Forestry Commission (FC) officers thought that diseased trees would eventually succumb and die.

6.3.8 Ability to provide fibre

A tree's ability to provide good quality fibre is important to craft makers. It is an indication of the potential productivity of that tree. Poor quality fibre means poor quality crafts are made which ultimately means less money for the craft makers.

If trees were able to produce good quality fibre, bark harvesters tended to be indifferent in terms of where they got the fibre. However, as quality decreases (for example once all the good quality first-cut fibre had been harvested), more fibre was harvested from across the different tenure systems. This was due to the fact that second-cut fibre *(mupindwa*) was generally of poorer quality than the first-cut fibre (*mutanguro)*, and craft makers would use more second- cut fibre to make a craft than they would if they had first cut fibre. Harvesters also preferred using first cut fibre which produced longer lasting crafts.

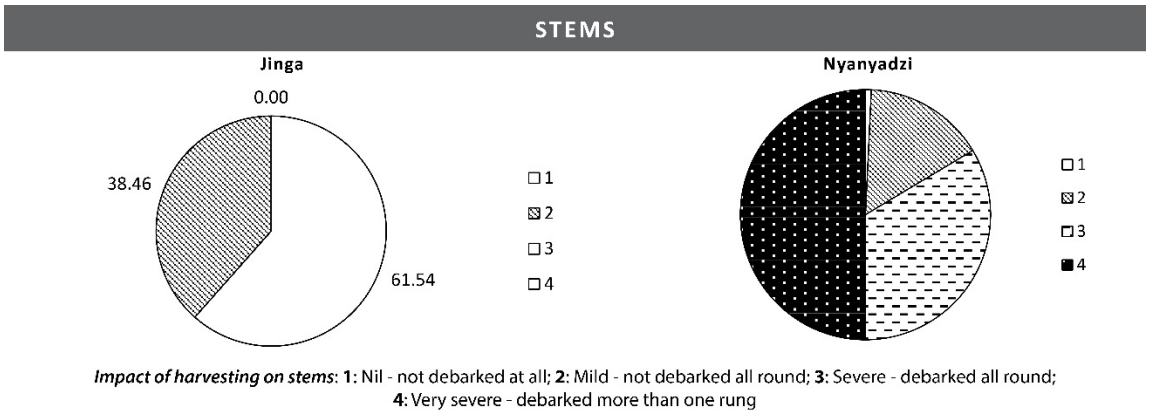
Plate 1: Heavily debarked (left) and black soot infested (right) trees

6.4 Cross site analysis for non-continuous variables

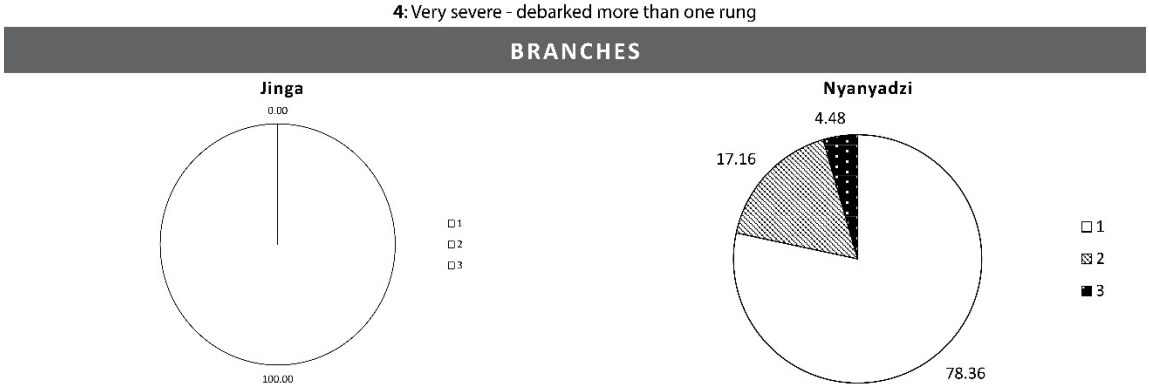
There were significant differences between tenure systems and the impact of baobab bark harvesting on trunks (n=243, $\chi 2=28.66$, df=6, $p<0.001$); branches (n=243, $\chi 2=51.26$, df=4, $p<0.001$); and the provision of fibre (n=243, $\chi 2=14.22$, df-4, $p<0.01$) (Table 20). However, the index of tree health did not differ between tenure systems (n=243, $\chi 2=4.84$, df=4, $p>0.05$)

Table 21: The impact of baobab bark harvesting on (a) stems, (b) branches, (c) fibre provision and (d) tree health.

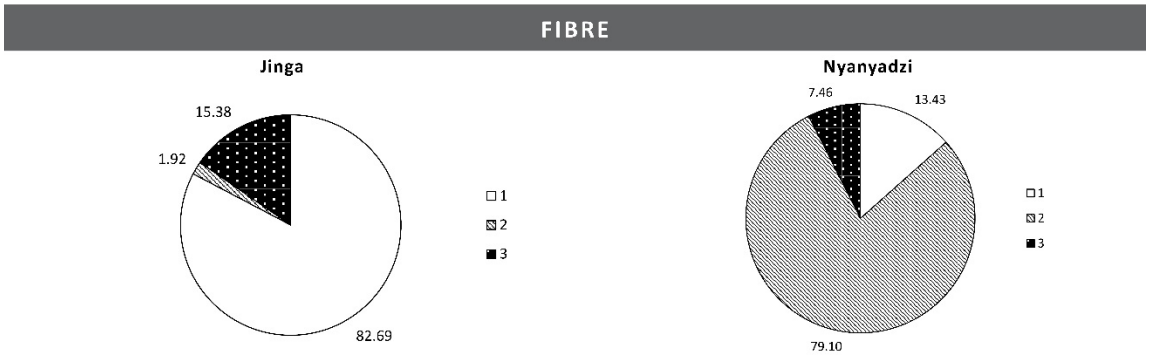
Values taken for trees under three different tenure systems in the Chimanimani District. Explanations for the different index value categories are explained in Table 2, Chapter 3. The proportion of trees in each category within each tenure system is shown.



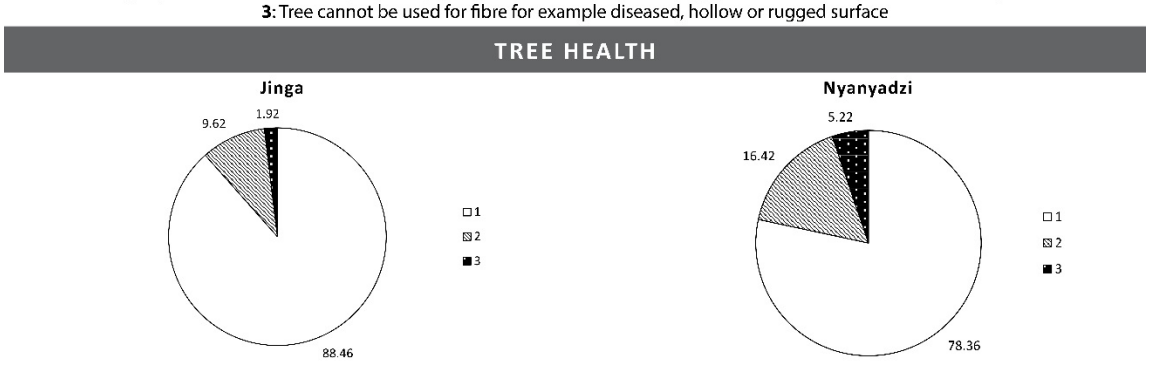
Impact of harvesting on stems: **1**: Nil - not debarked at all; **2**: Mild - not debarked all round; **3**: Severe - debarked all round; **4**: Very severe - debarked more than one rung



Impact of harvesting on branches: **1**: Nil - not debarked at all; **2**: Mild - not debarked all round; **3**: Severe - debarked all round



Ability to provide fibre: **1**: Good - provides good quality, first-cut fibre (mutangguro); **2**: Poor - second-cut fibre (mupindwa); **3**: Tree cannot be used for fibre for example diseased, hollow or rugged surface



Index of health: **1**: Good - no black soot disease; **2**: Poor - early signs of black soot; **3**: Very poor - the whole tree has black soot disease

6.5 Relationship between variables

Spearman rank correlation coefficients were calculated to analyse the relationship between different variables.

The number of harvests was significantly positively related to the area harvested as well as the impact of harvest on stems and branches (Table 22) The larger the area harvested, the more patches on the trunk that were harvested. However, the area harvested was not related to the impact on the branches. This was because only the upper side of branches were harvested. It was impossible for harvesters to debark the underside of branches because of the design of the scaffolds used to access the branches. The impact on the stems, however, was significantly related to the impact on branches. The more the trunks were harvested, the more harvesters debarked the branches.

Table 22: Spearman rank correlation coefficients for the number of harvests, area harvested and the impact of harvesting on stems and branches.

	Area harvested	Impact on stems	Impact on branches
No. harvests	0.575***	0.777***	0.199***
Area harvested		0.587***	0.057
Impact on stems			0.226***

These figures taken from 245 trees in the Chimanimani District. Significance values are: *** = $p<0.001$.

The number of harvests (but not the area harvested) as well as the impact on tree stems and branches was significantly related to the ability of the tree to provide fibre (Table 23). Continued harvesting, however, produced poor quality fibre. There was a negative correlation between the number of harvests, the area harvested, the impact on stems and the number of fruits. The number of bark harvests, area harvested, and the impact on stems and trunks was not significantly related to the impact on the trees' health.

Table 23: Spearman rank correlation coefficients for the relationship between bark harvesting of baobab trees and the number of fruits, the ability of the trees to produce fibre and the health index.

	No. of fruits	Ability to produce fibre	Health index
Number of harvests	-0.183**	0.244***	-0.022
Area harvested	-0.164**	0.077	0.037
Impact on stems	-0.199***	0.281***	-0.022
Impact on branches	-0.060	0.157**	0.007

These figures were taken from 244 trees in Jinga and Nyanyadzi in the Chimanimani District. Significance values are: **=p<0.01; ***=p<0.001.

6.6 Perceptions of sustainability

The high frequency of harvesting in Nyanyadzi has led the national government, through the FC, to declare the area the "epicentre" of baobab degradation. Hence a suite of regulatory mechanisms were put in place by the FC in collaboration with the RDC and EMA (Chapter 7).

The FC district officer and the Entomology Department regarded the black soot disease as a major threat to the survival of the baobab tree and this was communicated through the print media (Community urged to: 2014)[74]. Debarking was strongly believed to be a factor that predisposed the baobab tree to further infestation by the disease. The Department of National Museums[75] in Mutare concurred with the FC that debarking was responsible for the spread of the black soot disease, and that fruit harvesting was not having a negative impact on the sustainability of the baobab.

Results from a household survey carried out for this research showed that 71.0% of the population in Nyanyadzi believed that the current rate and pattern of baobab bark use was not sustainable. In Jinga, during a PRA exercise in 1993 (Hot Springs Report, 1995), locals projected that at the then rate of baobab use, there was not going to be a major change in

[74]Forestry Commission spokesperson, told the Zimbabwean newspaper that debarking reduces the lifespan of the baobab tree so there was need to educate harvesters on how best to debark (The Zimbabwean, 2014).
[75] Interviews with a curator from the Mutare museum who had done some preliminary study on baobab ecology.

the quality of the resource base in the village twenty years later (in 2013). In 2012, locals believed that baobab fruits were still able to provide enough fruits and fibre to local residents.

Overall, in assessing the sustainability of baobab use, both the technical experts and local users focused on bark-use and the black soot disease and less on fruits, for which lucrative markets have opened in the West.

6.7 Discussion

This chapter has illustrated the production capacity of the baobab trees under different tenure systems, as well as use patterns across the same tenure systems in Jinga and Nyanyadzi. Below I present a summary of the main findings from this chapter. To ascertain the ecological outcomes of the interaction of customary practices and statutory forms of governance in the regulation of baobab products across different tenures, production levels of the trees in Nyanyadzi and Jinga are discussed. This is followed by a discussion of the link between production and the black soot disease.

Fruit production and harvesting

Fruiting trends can be indicative of a tree's potential to regenerate, and can be a proxy for health status of the tree (Venter, 2012). Fruit estimation is also important to give an indication of the economic opportunities available (Venter & Witkowski, 2013b), and of the availability of food for both people and wildlife. Fruit production can be estimated using tree diameter or canopy. While this might give an indication of quantity, it does not consider fruit size, and is therefore, inappropriate for the study of baobab trees (Venter & Witkowski, 2013b). Therefore, physical counting of fruits was carried out.

By comparison with other baobab trees, the trees in the study site constitute an aging population (Venter, 2012). Based on the size of the trees, however, they may be considered at their peak in terms of fruit production (Schumann *et al.,* 2010). On average, for Jinga and Nyanyadzi, each tree produced 92.0 (±208) fruits per year. However, there was a very high variability in fruiting between Jinga and Nyanyadzi. Nyanyadzi trees produced fewer fruits per tree than Jinga. Trees in Jinga produced 226.5% more fruits than Nyanyadzi trees. In both areas, communally-owned trees, as well as those on state-owned land, had a lower number

of fruits per tree – 69.3 (±100.3) and 23.3 (±40.9) – respectively, than trees on privately owned land – 109.2 (±259.4). Importantly, these two tenure systems were characterised by having the worst debarked trees.

Predation of fruits by wild animals, especially baboons, might have contributed to the low fruit yields in the state owned and communal areas. Shells of fruits were observed in the communal and state-owned lands that had been eaten by baboons well before they reached maturity. Therefore, the potential yield in these two tenurial systems could be slightly more than what was captured in the survey. Fruit trees around homesteads and crop fields were generally protected from baboons as there was usually someone at home or in the field protecting the crops.

Relative to baobabs in Botswana and South Africa, baobab trees in the study site, particularly Nyanyadzi, are producing less fruit (Rhodes, 2009; Venter, 2012). Earlier work in the study area indicated fruit production figures of 250 fruits per tree (Mudavanhu, 1998; Romeo *et al.*, 2001). Venter & Witkowski (2013a) found similar rates in the north of South Africa. There was a lot of speculation from people who were interviewed about why there was a reduction in the number of fruits per tree, especially in the Nyanyadzi area. The district level state officials attributed the reduction to excessive debarking of the trees and heavy infestation by black soot disease. Local people in Nyanyadzi suspected reduced fruiting to be caused by spirits who were angry with the wanton way local people were utilizing natural resources. Overall, reduced fruit harvesting and debarking were topical issues.

Debarking versus black soot and fruit production

Results unequivocally illustrate that trees in state-owned land are debarked the most. The trees also produce less fruit, presumably due to excessive stress from debarking, since there is a strong negative relation between debarking and fruit production. That the baobabs are excessively debarked can be explained by the fact that the state does not enforce its regulations, which is further compounded by the accessibility of the trees to harvesters. Most of the trees on state land are located close to harvesters.

Results from this study show that there was a significant correlation between numbers of harvests, areas debarked and extent of trunk debarking, and the fruiting pattern of baobabs. This, together with frequent droughts, are plausible explanations for the below average fruit production. Work by Schumann *et al.* (2010) shows that debarking on its own has little or no impact on fruit production. However, this could be due to different levels of debarking. In Nyanyadzi, locals debarked trees all the way to the branches, usually in less than the two years stipulated turnaround time.

Debates in the literature on the impact of debarking on fruiting are many. In West Africa, the site for Schumann *et al.'s* (2010) research, there are no cases of debarking up the trunk and branches, as was the case in Nyanyadzi. Rather, Schumann *et al.* (2010) argue that branch pruning, which is uncommon in the study site, is the greatest contributor to poor fruiting. Dhillion (2004) postulated that leaf harvesting causes mutilation that reduces the number of fruits on each tree. Leaf harvesting in the study site is mild and most probably would not have any impact on fruit production. Elsewhere in national parks in Zimbabwe, Swanepoel (1993) and Mpofu *et al.* (2012) discovered that trees that are severely stripped by elephants tend to produce less fruit. Thus, beyond a certain degree of bark and leaf harvesting, the tree succumbs and limits fruit production. Results from this study showed that debarking affects the fruiting capacity of trees. Trees debarked up to branch level within a two-year period produce fewer fruits. These results call for reconsideration of the baobab's unique healing process which enables it to recover after debarking.

Debarking, just like bark stripping by elephants, has been known to predispose the tree to secondary infections by diseases (Piearce *et al.,* 1994; Kamatou *et al.,* 2011). As described, black soot infection has been one of the reasons for policy intervention by both the state and traditional leaders. The degree of bark stripping that caused a tree to succumb to infection was unclear, and it was a subject beyond the scope of this research. Preliminary results presented from this study showed that the number of bark harvests, and the area harvested, had no impact on the health of the tree by causing black soot outbreak. The harvesting of fibre up the entire stem to the branches was a new phenomenon which was not observed by earlier researchers (Mudavanhu, 1998; Mukamuri & Kozanayi, 1999; Romeo *et al.,* 2001; Mutasa, 2008).

A conclusion drawn from these findings is that there is a need to balance the increased demand for bark and the need to observe the two-year resting period for a harvested portion to heal. However, based on these research findings, it can be concluded that the two-year resting period stipulated by traditional leaders, is not sufficient. Romeo *et al.* (2014), after monitoring debarked baobab trees for five years in Zimbabwe, noted that debarked trees required a minimum of six years to recover to the pre-debarking level. Results by Kamatou *et al*. (2011), suggests a similar resting period, while estimates by Matose and Clarke (1993) of ten years seem exaggerated. The difference between customary practice and scientific results calls for the need to meld, if not support, customary practices with Western science-based knowledge.

Black soot disease: an outcome of stress?

During this study, respondents attributed black soot disease to severe debarking, droughts, and to the vengeance from spirits of the land who were reportedly angry with the excessive abuse of natural resources in general, and the baobab tree in particular, and with human rights abuses.

Results showed that the black soot disease was common in both Jinga and Nyanyadzi. Using predetermined indices, baobab trees in Jinga were on average still in good health, with the rate and intensity of infection in all the villages in Nyanyadzi not very much different from Jinga. This raises an interesting question regarding the impact of debarking on the spread of the black soot infestation.

Results suggest that bark harvesting has no significant impact on the outbreak of black soot disease and the infestation of trees by the pathogen. These findings refute earlier assumptions by Mudavanhu (1998) that the pathogen that causes the disease is transmitted using utensils used to harvest the bark. Trees in Jinga, where limited bark is harvested, have an almost equal level of infestation to Nyanyadzi. Causes other than stress from damage seem plausible. Such causes for example, include prolonged periods of drought (Piearce *et al*., 1994; Rhodes, 2009) coupled with the shallow root system of the baobab tree which is sensitive to droughts (Sharp, 1993).

Zimbabwe's rainfall over the past decade has amounted to the lowest cumulative total on record since the 1900s (Bolding, 2004). The argument that drought is the main cause of the disease is given credence by Sharp (1993), who reported that at Birchenough (in the Nyanyadzi area) between 1992 and 1993 (both drought years) a total of 27% and 44% of trees respectively were severely attacked by the black soot disease. Black soot infestation started in the 1940s in Zimbabwe, including in the Save Valley (which falls inside the study site), and its outbreak was associated with below average rains at the time (Piearce *et al.,* 1994).

A forestry officer for Manicaland discovered a number of affected baobab trees in the study site in 1949. These infected trees, which the FC has been monitoring, were still alive, 65 years later (Piearce *et al.,* 1994). This refutes earlier views especially by the FC that affected trees will die (immediately) as a result of the disease. The ban on bark harvesting was initially motivated by this perception. According to work by Fisher (1981), the baobab is the only tree species known to survive complete girdling. It does that by having its xylem parenchyma cells, which are just below the exposed wood surface, dedifferentiate into cambial derivatives that then regenerate xylem and phloem tissues. Normally, most trees regenerate bark slowly from the vascular cambium on the margins of the wound (Romeo *et al.*, 2014) which results in trees dying if ring barked.

Black soot and fruit size

In a separate assessment, Machingambi (2007) discovered that bark harvesting affected fruit size while the black soot disease affected the number of seeds per fruit. According to Machingambi (2007), heavily debarked trees produced smaller fruits while heavily infected trees resulted in fewer seeds in each fruit. There was a positive correlation between fruit size and the number of seeds per fruit; the smaller the fruit, the fewer the number of seeds it contained, and the reverse was also true. This negative impact of bark harvesting and black soot disease on fruit size and number of seeds validates the case for strengthening the regulation of bark use and of the factors that control black soot disease. From this perspective, the ecological sustainability of the fruit value chain is threatened with more debarking and black soot infestation.

With regard to black soot disease, there have been many different views expressed on what predisposes baobab trees to this fungal infection, and the official narrative seems to be based on inconclusive results if not speculation.

If indeed drought was the main cause of black soot disease presented above, as compellingly argued by numerous researchers, climate change will add a new dimension to the debate on the disease and local livelihoods dependent on baobab products. Climate change models predict higher temperatures in all baobab growing areas in Zimbabwe (Sanchez *et al.*, 2010).

Regeneration and recruitment

Although the regeneration and recruitment of baobab tress was not assessed as part of this work, a detailed study on the subject carried out in the area (Mudavanhu, 1998) showed that there was enough recruitment in the area. Work by Mpofu *et al*. (2012) in Gonarezhou National Parks, Zimbabwe and by Venter and Witkowski (2013a) in South Africa, also indicated that in general there was enough regeneration of baobab trees in most land use types.

In Jinga, residents thought there was enough recruitment as evidenced by young saplings seen under and near baobab trees. However, in Nyanyadzi, there were mixed sentiments about the recruitment trends with some informants highlighting that there was not enough recruitment due to the excessive sale of fruit and seed outside the producer communities. The FC was proactive by promoting some silvicultural interventions, together with local leadership to encourage the growing of baobab trees. In Nyanyadzi, the FC partnered with the local traditional leadership to establish an indigenous woodlot. Communities were provided with seedlings of indigenous trees to plant during the annual National Tree Planting week.[76] Active planting and protection of adult trees has been recommended as a way to ensure sustainability of the resource base (Venter & Witkowski, 2013c).

It has been observed in several studies that communities can successfully cultivate indigenous trees. These include *Warburgia salutaris* (Veeman *et al.*, 2014), *Afzelia quansensis*

[76] In Zimbabwe, the first Saturday of every December is designated a national tree planting day. The day was launched by the Prime Minster of Zimbabwe in 1980. Individuals, communities or organisations are expected to plant trees from this day to the end of April.

(Nemarundwe, 2003), *Uapaca kirkiana* and *Sclerocarya birrea, Ziziphus mauritiana* (Kwesiga *et al.,* 2000; Nemarundwe, 2003; Gerhard & Nemarundwe, 2004; Akinnifesi *et al.*, 2007), and *Adansonia digitata* in West Africa (Akinnifesi *et al.*, 2007). Surveys on tree preferences in Zambia, Malawi, Zimbabwe, and Tanzania showed that *Adansonia digitata* was one of the natural trees locals preferred for domestication (Akinnifesi *et al.*, 2007). Cultivation and good tree management has been shown to improve fruit traits of planted indigenous fruit trees (Maghembe, 1995; and Leakey, 2005). It also improves security of tenure which means even poor households will have direct control over productive resources.

Use of baobab trees in state owned lands-the soft under belly

Results from this study unequivocally illustrate that trees in state owned land suffered the most from debarking. They also produced less fruit, presumably due to excessive stress from debarking, since there was a strong negative relation between debarking and fruit production. That the baobabs were excessively deba rked can be explained by the fact that the state did not enforce its laws which was further compounded by the accessibility of the trees to harvesters. Most of the trees were located close to harvesters. These trees were targeted when traditional leaders tightened access rules in the communal areas. Mandondo and Chahweta (2008) concluded that use of state lands usually gives rise to contestation as communities living close to the resource claim their own tenurial niches in order to harvest some resources. This appears to be the case in Nyanyadzi.

These findings were consistent with what Matose (2002) found around gazetted forests in Zimbabwe. Matose (2002) concluded that even with staff on the ground, gazetted forests were still poorly guarded, making them vulnerable to local communities who could easily harvest prohibited forest resources. Poor working conditions and rampant corruption by authorities in the last fifteen years has demotivated the skeleton staff on the ground (Alexander & McGregor, 2013). This has greatly compromised policy implementation. This conforms to the findings of Cerutti *et al.,* (2012) in Cameroon, that when disillusioned state officials on the ground perceive those at the top to be corrupt this can cause policy failure.

In addition, the Zimbabwe government has been struggling to generate funds to manage even high-value state forests (Mutimukuru, 2010). According to the Minister of Finance (2009-

2013), the country had been struggling for more than a decade to fund key sectors such as health (Biti, 2012), which has left very little money to support the conservation of forests. This has left traditional authorities having oversight of baobab trees traditionally under custodianship of the state. In evaluating the effectiveness of customary practices in ensuring ecological sustainability, cognisance should be taken of the fact that traditional authorities as enforcers of customary practices, are spreading their efforts over additional areas that the state should be responsible for.

Pertinent to this study is what Kajembe *et al.* (2003) noted as the weakness of the state when it takes over management of a communally-owned resource area. Kajembe *et al.* (2003) noted that when government takes common property from the people and makes it state property, unless the state is able to enforce its laws, the land slides into an open access regime. The case of the "college" area in Nyanyadzi which could result in open access for fibre, is a good example. Ecological results from the "college" show a situation slowly sliding into Hardin's (1968) envisaged tragedy of the commons whereby the communally owned natural resources are depleted beyond sustenance as each harvester tries to maximise the benefit they get from the area.

However traditional authorities still exercise some level of control of resource management even in those state-owned areas where the state is reducing its influence. Furthermore, traditional authorities have to regulate use of trees on private lands, such as those growing around homesteads. While the management of such trees was the direct responsibility of homestead owners, it behoved traditional leaders to ensure that all trees under their jurisdiction are well managed, regardless of their location. This is also a statutory requirement. The Traditional Leaders Act (TLA) of 1998 mandates traditional leaders to ensure that natural resources under their jurisdiction are used according to national laws, and to "immediately report any contravention of the law to the police." The trees might be on state land or around a private homestead, but if they grow within the traditional leader's geographical area, s/he still considers that they are under her/his jurisdiction.

Traditional leaders also have a traditional duty to care, for resources under their jurisdiction and argued that, "elected governments come and go but we remain guarding the land and

resources of our forefathers"[77]. Similarly, Baldwin (2015) observed in neighbouring Zambia that chiefs' longer time horizons encourage investment in local institutions that enable the provision of local public goods. Failure by the traditional leaders to guard against wanton destruction of natural resources was believed to invoke the anger of the spirits of the land. For that reason, traditional leaders exercised oversight over "privately" owned trees around homesteads. The traditional leaders felt that they owed it to their ancestral spirits to safeguard all natural resources found in their areas, regardless of tenure.

Socio–technical considerations

For the Gumbu people of Nyanyadzi, craft making was part of their culture and identity. It defined who they were. Much as debarking was stressing the trees, putting a moratorium on craft making as a policy option (as has been attempted by the local District Council Authority) was considered a harsh intervention. Alternative sources of fibre for example, from jute or sisal were proposed, while at the same time promoting trade in fruit trading for companies involved in processing and exporting baobab pulp and oil. Results by Schumann *et al.* (2010) on commercial fruit use seem to show minimal impacts on the baobab tree, provided enough seeds are left in order to regenerate new trees.

Propagation of the baobab trees by harvesters should be considered as an option to enhance ecological sustainability and improve livelihoods. Their growth rate has been found to be reasonably fast especially after the first five or six years (NRC, 2008), with fruiting possible after eight to twenty-three years (UNCTAD, 2005). Thus, as noted by the NRC (2008), planted trees can be "life-insurance plantings" that provide permanent food security for the household. Already, one community in Nyanyadzi has started to plant baobab trees, albeit on a small scale.

Harvesting of privately-owned and communally-owned trees was regulated to some extent. Therefore, it can be inferred that communally-owned resources, despite pressure arising from use of products, were still managed by customary practices. As noted by Agrawal (2007),

[77] Similar sentiments were also raised in during a community meeting when the ephemeral nature of elected governments was likened to a running stomach that does not last long. Further, the TLA (1998), section 12, subsection (1g) mandates traditional leaders to report any resource degradation and disasters in" the area under their jurisdiction".

customs and social conventions designed to induce cooperative solutions, can overcome collective action problems and help achieve efficiency in the use of such resources. This was very clear in Jinga village, where, despite there being a lucrative market for baobab products in Nyanyadzi, only 20km away, baobab harvesting was still well regulated. In Nyanyadzi, use was particularly excessive in state owned areas due to lax enforcement of rules by the state, while in private and communal tenure areas, it was moderate to bad respectively.

In Nyanyadzi, as use pressure increased, some of the traditional methods of conservation started to wane. Customary practices that had been observed over the years, such as giving debarked sites at least two years to recover, are no longer being adhered to. This confirms observations by Mutenje *et al.* (2010), that the effectiveness of local level practices can be weakened by exogenous pressures arising from increasing market integration, and high population pressure. A need to strengthen these customary practices is imperative.

On the basis of the ecological variables assessed, the exploitation of baobab products in Jinga was still sustainable. The absence of bark harvesting in the area rendered use sustainable. The same cannot be said about Nyanyadzi. A long history of bark use, which has intensified in the last two decades, has put the baobab tree under immense pressure. Cultural differences between the two areas explained the differences in use patterns. The need to effectively manage baobab trees in both Jinga and Nyanyadzi is imperative to ensure ecological sustainability. As noted by Hara *et al.* (2009) and Quan (1998), sustainable use depends on sound management of the resource base. Both customary and statutory forms of governance are key to achieving this double dividend principle. Chapter 7 presents and discusses the local level forms of governance that are regulating baobab use in the study site.

In some respects, baobab use is pitting the state against the peasants, and customary versus statutory forms of governance. The state has control over all the land and the resources on the land. Even what is considered private or communal land, belongs to the state, with communal areas held in trust by the traditional leaders as communally-owned property rights (Mandondo, 2001). However, as Bromley and Cernea (1989: 25) point out, “many states have taken on far more resource management authority than they can be expected to carry out effectively”. Further, Murphree (1993) concluded that management of communally owned resources by the state in Zimbabwe has been demonstrably ineffective in both the colonial

and post-colonial eras. The case is worse for NTFPs, or minor forest products like baobab, because of their perceived low values.

6.8 Conclusion

This chapter concludes that although customary practices, just like the baobab tree itself, have shown a lot of resilience in regulating the use of baobab trees under different tenure and use regimes, in Nyanyadzi, such customary practices appear to be stretched to the limit. This is evidenced by over harvesting of trees in the area. Customary efforts at regulating use need to be complemented by the state. However, as shown by the degree of resource degradation in state-owned areas in this study, the state was ineffective in enforcing its statutory regulations on baobab use. Both the customary and statutory forms of governance have inherent weaknesses. Use of either or both calls for serious consideration. What mechanisms then can be proposed as the form of support which the state and customary forms of governance should provide to each other? These questions are further developed in chapter 8.

CHAPTER 7: CUSTOMARY AND STATUTORY FORMS OF GOVERNANCE OVER BAOBAB IN THE CHIMANIMANI DISTRICT OF ZIMBABWE.

The aim of this chapter is to understand how customary and statutory practices govern the use and management of baobab in the Chimanimani District of Zimbabwe. The chapter elucidates what happens in practice in relation to how people gain access to the baobab tree, and how they negotiate different systems of governance to access, harvest, use and sell baobab products. In this chapter I develop issues raised in Chapters 4, 5 and 6 and provide empirical evidence from Nyanyadzi and Jinga to demonstrate how the interaction between customary and statutory practices occurs at the local level. The chapter starts with an analysis of institutions involved in the governance of baobab products and an assessment of how local people perceive the roles of different institutions. An overview of customary and statutory practices used to manage baobab products is given, followed by a discussion of resource users' knowledge of, and compliance with these forms of control.

7.1 Institutions and their influence in regulating baobab use

An understanding of the institutions involved in regulating the use of baobab, as well as their perceived influence, is important in order to appreciate the different dimensions of baobab governance. Table 24 below presents a ranking of the influence of different institutions on baobab governance, based on the perceptions of residents in Nyanyadzi. The score denotes the relative weighting accorded to the institution by informants, while the rank reflects the position of the institution in relation to other institutions insofar as managing natural resources is concerned. Chapter 3 details how the ranking and scoring process was done in the field.

Table 24: Institutions and their influence in regulating baobab use in Nyanyadzi

Institution	Score[78]	Rank[79]	Remark
Village heads	20	1	Live close to the resource base. They are the traditional custodians of all the natural resources in the villages.
Chief	17	2	Though the chief lives far away, he is very influential and powerful. His fine for transgression is usually punitive.
Agricultural and Extension Services (AGRITEX)	14	3	They are locally resident and interact often with residents to discuss farming forestry issues as part of agro-forestry practices.
NGOs (SAFIRE, EAfrica)	11	4	Facilitate the crafting of local by-laws that regulate baobab use. Teach sustainable harvesting methods and business models. Committee members help to manage baobab trees.[80]
Homestead owners	9	5	They can protect trees around their homestead through fencing, using charm (*muzazata*), barbed wire or brush.
Ward councillor	8	6	Articulates ward needs at council. Spearheads development in the ward by "luring donors". Mandated by local by-laws to regulate access to baobab products using a permit system
Ward Environmental Management Committee (WEMEC)	7	7	Coordinate harvesting activities. It is headed by the ward councillor as its chairperson while traditional leaders help to decide who has access, and how access can be granted. WEMEC does not have fiscal power.
(Forestry Commission, Environmental Management Agents, Rural District Authority)	5	8	Make occasional visits to the area to discuss use of baobab bark. Sometimes mount road blocks to arrest illegal fibre harvesters.
Member of Parliament (MP)	4	9	Among other duties, the MP courts donors to come to the area, for example to support initiatives to add value to baobab products.

[78] This was the perceived influence of the institution to governance of access to baobab. Importance was illustrated by the number of counters allocated to each option.

[79] This was prioritisation of the options according to their perceived weighting by local informants.

[80] Such committees have limited powers. Residents used the analogy of a security guard from a private company whose mandate is only to guard a small area for example, an Automated Teller Machine (ATM), and turns a blind eye to other crimes away from the ATM machine. The argument is that the committee members can only control the behaviour of members in their groups.

Schools	3	10	Both primary and secondary schools cover environmental science in their curriculum to educate children on the value of forests.
Police	2	11	Maintain order through settling domestic disputes arising from baobab use.
Churches	2	11	Pray under some baobab trees which then become protected. Some teach good environmental practices.[81]
Witchdoctor[82]	1	13	*Kusinga musha* – ring fence trees and property around the homestead using charms which purportedly ensure that any unsanctioned harvesters will easily be identified by the homestead owner.

Traditional authorities (village head and chief) were ranked highly on account of their being the 'owners' of the land and the resources found thereon. However, the chief was ranked second after village heads because he resided in Muusha, over 70 km away from Nyanyadzi and was not directly involved in the day-to-day governance of the baobab products.

AGRITEX was one of the government departments that was highly ranked. Although their primary responsibility is to provide technical support in crop production, AGRITEX interacted directly with residents and taught them about environmental conservation. Each ward had an average of three resident AGRITEX officers.

In Nyanyadzi, the institution of the witchdoctor was raised and explained by women. They reported that to deal with illegal bark harvesters, they had considered enlisting the assistance of Ndunge, a proficient witchdoctor.[83] He is believed to have supernatural powers to inflict harm on anyone who steals from any person to whom he has given charm. The charm is administered within the context of what is called the "*kusinga musha*" ritual. The mere

[81] This was mainly mentioned by congregants of the United Methodist Church (UMC). Emery Alvord, the godfather of agricultural extension in Zimbabwe who was a United Methodist preacher and resident at Nyanyadzi in the 1940s, was credited by elderly people in the area for having preached about good forestry practices. The elderly in the United Methodist Church (UMC), still upheld such teachings. According to Rev. Manungo of the UMC, on environmental issues the church was guided by the social principles of John Wessel – the founder of the church who taught people to "do good" in order to preserve the natural resources that God created in their goodness as stated in Genesis 1 verses 26-31 (During devotion at an environmental training workshop at Mutambara Mission, 19/8/09).

[82] In particular, there was one prominent magician in Chipinge who was believed to have potent magical powers and was widely consulted especially by fortune seekers like alluvial diamond panners (see Athlete, pastor and master: 2015).

[83] Ndunge has received wide media coverage (for example, Athlete, pastor, master: 2015).

mention of Ndunge's name within a deeply conservative society sends shivers up the spine of any prospective thief.

WEMEC was ranked low despite receiving support from civic organisations (for example, SAFIRE and EAfrica) and the RDC. Reasons for this are varied but revolved around legitimacy and sustainability. Locals viewed the NGOs as sometimes pushing the agenda of the RDC. Furthermore, the NGOs usually implement very short programs after which the communities are left to do the projects on their own with limited or no resources.

Formal institutions (RDC, EMA, and the FC) were ranked low, reflecting the residents' negative attitude towards these institutions which they viewed as only interested in extracting taxes and levies from the resource harvesters and being part of the state, which had implemented a number of unpopular policies.

Informants did not mention the Ministry of Education and Culture. The Ministry has an officer resident at Nyanyadzi who is responsible for promoting cultural values and practices. Follow-up interviews indicated that the Ministry, through a local officer, was working with organised craft groups in Nyanyadzi to promote marketing of the crafts through attending District and National Arts Council fetes.

For Jinga, institutions involved are presented in Table 25. The institutions included traditional authorities, elected leaders, schools, and civic society.

Table 25: Institutions and their influence in regulating baobab use in Jinga

Institution	Score	Rank	Remark
Village head	20	1	"Owns" the land-and everything in it. He has prosecuting powers including evicting habitual offenders. Presides over rain making ceremonies and other rituals.[84]
Aides to the village head	12	2	These are the village head's eyes. They wield power to arrest offenders but do not have powers to prosecute.
Chief	10	3	Imposes punitive fines on offenders. Though powerful, he lives far away.
Ward councillor	9	4	Advises residents of new environmental policies from council. Presents local grievances to the Rural District Council.
NGOs (for example, Germany Agro Action)	7	5	They promote community horticultural projects in the village. As part of their training they also teach good environmental practices.
Police	6	6	Instil discipline in residents, so that residents end up being obedient to their traditional leaders.
Member of Parliament	4	7	Usually discusses political and development projects rather than forest issues. She articulates residents' concerns and aspirations about the use of local natural resources in Parliament.
Environmental Management Agency (EMA)	3	8	It was once active in the late 1980s controlling charcoal trading which had started in the area and was threatening to cause deforestation. It is not actively involved in the management of baobab products in the area.
Schools	1	9	Teach children good forestry practices.

Source: Survey, 2012

In Jinga, power was concentrated in the hands of a village head, more than in Nyanyadzi. During the ranking exercise, one elderly man aptly summed up the power dynamics in the village. "*Muno muva Garwe hatidi dongawatonga remwedzi nenyeredzi*" ("We, of the Garwe

[84] Failure by the traditional leaders to conduct thanksgiving is believed to invoke the fury of the spirits of the land which consequently causes suffering among residents. Thanksgiving was believed to result in environmental nourishment for example trees fruiting abundantly.

tribe, detest the multiplicity of power nodes like that of the moon and the stars – only a central source of power should prevail – like the sun during the day)." However, within the Jinga community there is some devolution of power. A sister to the village head, with the help of her daughter-in-law nicknamed Mugabe,[85] dealt with small administrative issues by allowing baobab harvesters living near her, particularly women, to harvest baobab products (Box 2, Chapter 5).[86]

Aides to the village head also authorised the harvesting of small quantities of natural resources without necessarily having to consult the village head. On that account, they were recognised as an important institution that enjoyed some degree of autonomy from the village head.

Informants were not aware of the existence of WEMECs, nor had they elected the committee. Though the police were mentioned, residents reported that the police were only informed of environmental issues after cases had been reported to the village head. Bypassing the village head by first reporting cases to the police brought a backlash and a fine from the village head.

7.1.1 Comparisons between Nyanyadzi and Jinga in terms of institutional configurations

Jinga differed from Nyanyadzi in a number of ways. In Jinga, there were fewer institutions involved in the governance of baobab products (9 compared to 13 for Nyanyadzi). The institution of village head was prominently mentioned in Jinga, together with the supportive aides to the village head. Though aides existed in Nyanyadzi too, informants did not want to differentiate them from the village head because they did not sanction the harvesting of baobab products without the authority of the village heads. Instead, in Nyanyadzi, the chief was ranked as the second most influential though he lived some 80 km away. Fortuitously, the chief had his subordinate resident in Nyanyadzi and he was actively involved in issues regarding the management of baobab products.

Although power appeared centralised in the village head in Jinga, there was some degree of devolution to the village head's aides and relatives and this improved the efficiency of

[85] A figurative name meant to denote the immense power the woman had, just like the president of the country who has ruled the country with an iron fist for more than three decades.
[86] In Ndau policy women from the ruling family are influential figures (Beach, 1994).

governing baobab products and natural resources in general. Furthermore, in Jinga the role of NGO involvement in regulating the use of baobab products was less influential, confined to training in environmental conservation and community horticultural programs.

In both Nyanyadzi and Jinga, traditional leaders had centralized powers and considerable authority in the governance of the different aspects of baobab. Another similarity was that in both areas, state institutions were ranked low. In both areas, there was recognition of the roles schools played in environmental education but their influence was not considered to be strong. Overall, for both Jinga and Nyanyadzi, traditional authorities were ranked highly while elected and government departments were held in low regard. Perceptions about traditional authorities and formal authorities influenced the way resource users negotiated access to baobab products. The nuanced negotiation strategies used by resource users to access various baobab products are explained later in this chapter.

7.2 Actors involved in the local baobab value chain

Actors involved in the baobab value chain were identified and characterised in terms of their interests and linkages (Figure 7). Actors are institutions who have a direct or indirect interest in baobab products and services. An appreciation of the range of actors and their interests is crucial to understanding baobab use dynamics; interrogating the governance issues at each stage along the chain aids this analysis.

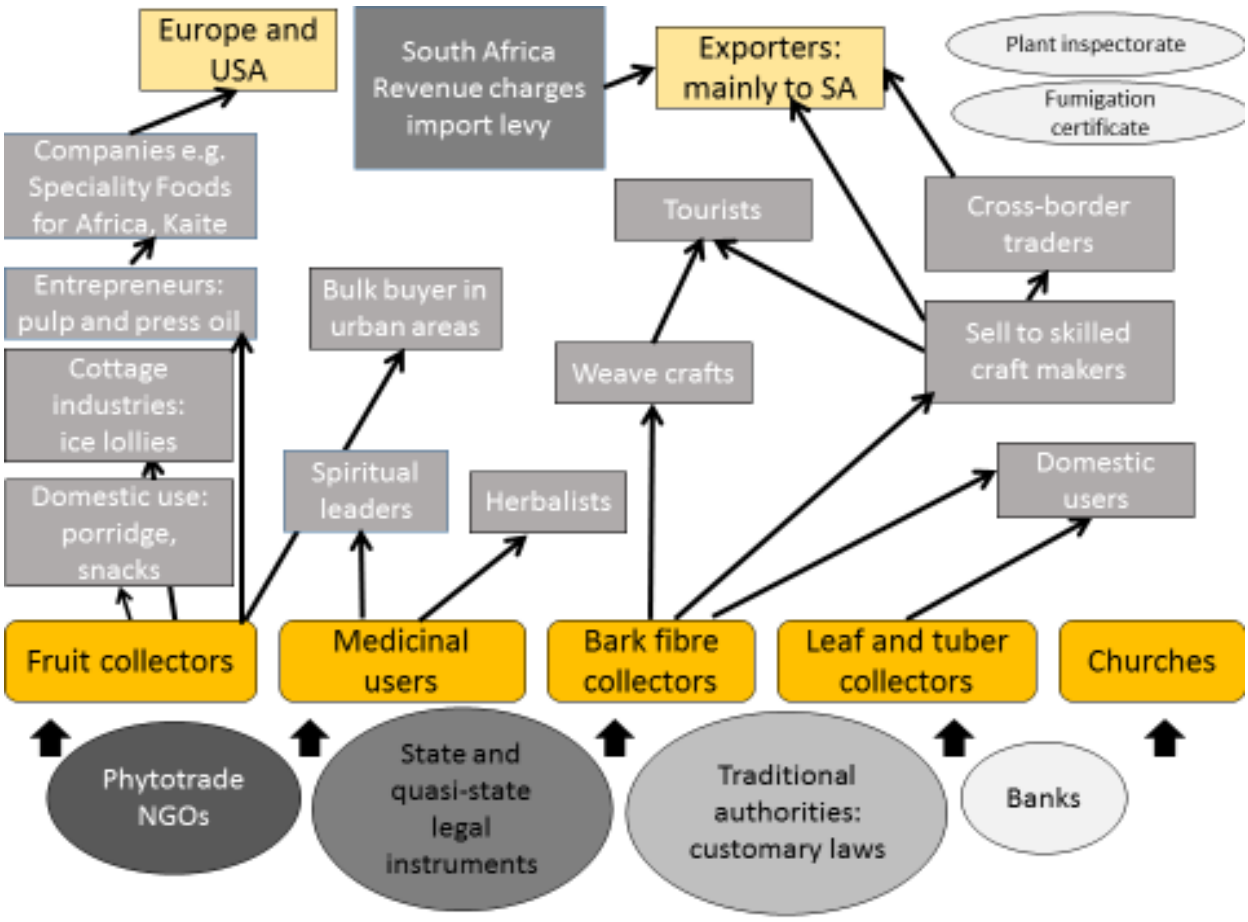


Figure 7: Actors in Baobab value chain

While fruits and fibre by-products end up in regional and international markets, particularly in South Africa and Europe, only local actors were considered in this study. These included the private sector, state institutions, NGOs, local harvesters, and banks. Each of these actors had a specific interest, and they often conflicted. For example, some users were only interested in harvesting for subsistence purposes while others had commercial inclinations.

Banks provided lines of credit to entrepreneurial resource harvesters who processed baobab fruits into pulp for sale to big private companies. In Nyanyadzi, the NGO Phytotrade Africa coordinated the promotion and trade of baobab fruits through supporting buyers like Kaite and Specialty Food Africa. NGOs including EAfrica, SAFIRE and Practical Action also worked in Nyanyadzi with a view to ensuring the sustainable harvesting of baobab fibre.

7.3 The cultural significance of baobab products

The baobab tree played a key cultural role in the lives of people in Chimanimani. The cultural significance of baobab tree products was expressed in local languages, and described harvesting dynamics and the cosmologies around use. This has a bearing on the governance, of baobab. Such expressions were also used to emphasise principles of equity and sustainability in the utilisation of shared natural resources, including baobab.

Language is an indispensable feature of culture in all societies (Gombe, 1995; Bogopa, 1999). Linguists readily acknowledge the use of language to communicate culture and shape the behaviour of people (Mpofu, 2003; Chigidi, 2009). It is the major vehicle for the transmission of people's beliefs and values (Mpofu, 2003). Treating language in this light helps to understand why the Ndau use a particular type of language on a particular occasion in their use of baobab products. Understanding such languages helps to situate local customary practices in proper context.

Culturally, spendthrift behaviour was abhorred and discouraged in the utilisation of communally owned natural resources, such as baobab. Behaviour such as the harvesting of unripe fruit products (*matakufa*) was regarded as a form of greediness (*mbawu*) and was punishable by the spirits of the land. *Mbawu* was when one harvested more than what one wanted to use or sell. This form of hoarding was discouraged because some of the harvest could eventually rot without being consumed or sold. Such wasteful behaviour was also called *kuzhuwa*, a form of pillaging. Some harvesters could be very efficient at harvesting baobab products (*kuva nechara*), but that was not regarded as a problem because as soon as they got what they wanted to meet their needs, they would stop. High productivity (*chara*) was usually inborn or was acquired as harvesting skills were honed. Either way, harvesters who had *chara* were adored because they were efficient resource users and were not wasteful, especially with baobab bark. They were quick to harvest enough of their target yield and gave others a chance to harvest as well. Thus, while a utilitarian mentality was associated with conservation efforts, it had to be guided by rationality on when to stop harvesting.

Generally, the baobab tree was considered a priceless, God-given resource, and locals in Nyanyadzi argued that if they were given access, and were conscious of the centrality of the

tree to human welfare, they were bound to exercise duty of care. Reasonableness in the use of the resources was expected to prevail among users.

7.4 Cosmologies of the Ndau in the governance of natural resources

Ndau cosmologies also play an important role in the conservation of baobab. There was a strong belief that the spiritual world manifests itself through physical resources. There is a close relationship between the well-being of the forest and that of the people who use and manage the forest. Environmental abundances or disasters were often explained in religious rather than biophysical terms. In the case of baobab, the fact that an increase in black soot disease coincided with the period of economic and political repression was sometimes explained by locals as a consequence of ruthless repression of dissenting voices by the regime.[87] Elderly informants in Nyanyadzi supported this belief by using a long-observed behaviour of child and mother, "a baby never suckles from its mother if the mother is weeping." People cannot be nourished if Mother Nature is weeping from savage abuse. Sound, responsible management of the forest and its products is required for nature to provide abundantly for its residents, so went the logic.

Bad behaviour at a personal level could be construed as causing community-wide environmental problems. Thus, each time there was a natural disaster, someone was suspected to have done something wrong to warrant the wrath of the spirits of the land. This called for the traditional leaders to consult with their diviners. In Jinga, one Mr. L, was accused of incest with his daughter and was evicted from the village by the head with the blessing of Chief Mutambara.[88] Frequent droughts, outbreaks of menacing quelia birds and poor baobab fruiting was allegedly caused by this act. Consequently, this forced community members to show good manners at an individual level for the common good.

At Nyanyadzi, the local United Methodist Church hacked down a very large *Xanthocersis zambeziaca* tree that was supposedly sacred, for the purpose of building a preschool. The

[87] In Shona history, another interesting case of such historical coincidence is the outbreak of the rinderpest disease in 1896 which killed many cattle. The outbreak of the disease coincided with the arrival of the colonial column and the Shona believed that the disease was caused by the arrival of the Whites which the spirits of the land disapproved of. The Shona then rose up against the Whites in what was to become the first Chimurenga–war of revolution.

[88] The issue was also covered in the Manica Post, provincial tabloid (Father deflower, sires, 2012)

Church had to approach the local traditional leadership for the purpose of rapprochement with the spirits of the land after the roof of the preschool was blown away by mysterious winds on two separate occasions (Kozanayi *et al.*, 2014).

Traditional leaders were regarded as the earthly custodians of natural resources and used customary practices to regulate their use. They also belonged to the spiritual realm as they acted as intercessors between the living and the spirits when they presided over rituals of appeasement or rapprochement.

Before any forest product harvesting, a ritual to supplicate the spirits of the land was carried out by the harvester. For baobab products, the traditional leaders were supposed to do the supplication on behalf of the whole community for plentiful provision. The degree to which this was still being observed by both the resource harvesters and the traditional leaders could not be ascertained but local accounts suggested that it was now rare.

In Nyanyadzi, more than in Jinga, group discussions indicated that there had been significant changes in the locals' belief system, brought about by social, political, and religious factors. The Jinga village head summed it thus, *"Rave bindura nyika kuridza ngoma ngeguvhu* (incomprehensible change as illustrated by a person playing the drum by their navel)." This denoted admission by the village head that the socio-politico-religious factors were having profound and confounding impacts on local customary practices.

7.5 Customary practices regulating use of baobab products in Nyanyadzi and Jinga villages

Table 26 below details the rules and practices used to regulate access to baobab products.

Traditional rules were similar for Jinga and Nyanyadzi with differences in the way the rules were enforced. In Jinga, almost all rules were formulated and enforced by traditional leaders. In Nyanyadzi, state authorities were actively involved in the aspects of baobab governance.

Table 26: Customary rules governing utilisation of baobab products in Nyanyadzi and Jinga

Baobab Product	Rules
Fruits	Only harvest ripe fruits when they have fallen to the ground. Leave some fruits for wild animals. Do not burn the shells of sweet fruits.
Bark	Only harvest from mature trees. Ring barking is prohibited. In Nyanyadzi, harvesting for sale has to be authorised by traditional leaders. To harvest bark and fruits from trees around homestead one must seek authority from homestead owner.
Leaves	Do not harvest from sacred trees.
Tubers	Only gather enough for own use. Selling is prohibited.
Whole tree	Cutting down of the whole tree is prohibited. When it is absolutely necessary to cut it down, permission has to be sought from traditional leaders.
Non consumptive uses	Worshipping under the tree has to be authorized by traditional leaders.

7.6 Changes to customary and statutory forms of resource governance

Both customary and statutory forms of governance for baobab have changed over time in Nyanyadzi and Jinga; 18.7% of households reported changes in customary practices since the early 1990s, and 27.4% considered statutory forms to have changed as well. Causes for the changes were political, economic, and social. Figure 8 presents some of the reasons for the changes cited by residents.

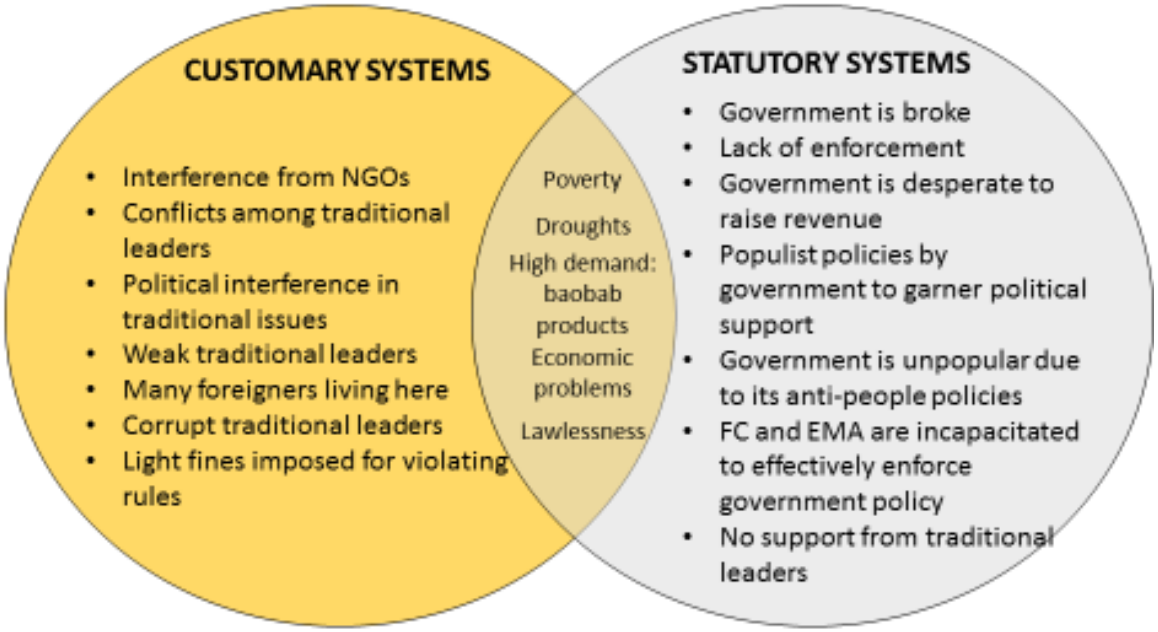


Figure 8: Reasons given for changes in customary and statutory systems of baobab governance in Jinga and Nyanyadzi

A number of exogenous factors related to the macro-economic and political situation in the country, contributing to the weakening of both governance systems. Such factors included unemployment, lawlessness, repressive policies by the government and poverty. There were also some inherent weaknesses within the state and traditional leaders' authorities which respondents believed contributed to the weakening of baobab governance. These included corruptions among traditional leaders and lack of resources on the part of the government. There was a belief that both forms of governance undermined each other's efforts. Traditional authorities accused the state of disempowering them in the early 1980s. Their views on this were best captured by Headman K of Nyanyadzi, who remarked that in the early 1980s there was wanton destruction of the forests, as traditional leaders were rendered powerless by the new government, "we were also made subjects of the new leaders (VIDCOs)". Traditional leaders argued that since then, they had been struggling to regain control of the populace with regard to regulating access to natural resources.

Local people in both Jinga and Nyanyadzi readily admitted that through the intermingling of different ethnic groups there were ethnic cultural practices that were not commonly observed. In both areas, a distinction was made between local and upland rules and practices.

Often, they spoke of "that practice is done in the uplands not here in the valley[89]." Ndau residents who lived in the valley waived some customary practices in order to survive in the dry valley. Differences mainly arose with regard to the commercial harvesting of baobab products; while the chiefs were generally unhappy with the practice village heads supported it.

Table 27 below presents informants' perceptions on the nature of the changes to the customary and statutory practices in Nyanyadzi and Jinga.

Table 27: Nature of changes to customary and statutory practices

Nature of change	Customary practices (%)	Statutory practices (%)
Became more relaxed	36.5	26.1
Became stricter	29.7	13.0
Replaced by statutory laws	4.1	
Replaced by customary practices		2.2
Replaced by by-laws	2.7	6.5
Weakened by commercial use	8.1	10.9
Don't know	18.9	41.3
Total	**100**	**100**

N=336

Weak enforcement of rules was the main cause of the change for both forms of governance. However, 29.7% of the respondents felt that customary practices had become stricter as compared to 13.0% who felt the same about statutory practices. Overall, commercial utilisation of baobab products did not impact the two forms of governance regulating baobab use (customary practices (8.1%) and statutory practices (10.9%). It appeared many informants were not aware of the statutory rules in place, as shown by 41.3% saying they did not have a view to the issues under discussion.

[89] This is reference to other Garwe and Gumbu who live on the escarpment where dry land crop production is more productive due to better rains received. Chiefs Mutambara and Muusha for the Garwe and Gumbu also live upland.

7.7 Negotiating access to baobab

Access to baobab products was negotiated in complex ways from household to ward levels. Application of customary and statutory rules at these levels differed and is described in the ensuing sections.

Grazing areas were the main source for baobab products, and accounted for 37.9% and 42.3% of harvested fruits and fibre respectively. A sizeable number of households harvested the two products from around their own homesteads and crop fields. Trees in sacred areas were not harvested a lot; less than 2.0% of the households harvested both fruits and fibre from these areas. Kinship and residence-related access patterns were discerned. Neighbouring districts were an important source of products. A total of 7.5% and 12.8% of households in Nyanyadzi harvested fruits and fibre respectively from Chipinge and Buhera Districts which bordered Nyanyadzi. Vendors supplied 3.3 % of households with fruits and 15.4% with fibre. A quarter (25.4%) of the households harvested fruits from their own yards, compared to 21.8% who harvested fibre from their own yards.

Complex customary and statutory practices were used to negotiate access, at a variety of different geographical scales.

7.7.1 Customary practices regulating use

Intra household level

In Nyanyadzi, every member of the family had access to fruits and fibre from privately-owned trees located around homesteads. Proceeds from the harvest were usually shared among family members. Village heads had oversight over the use of baobab trees around homesteads and punished anyone who violated rules. Men were mainly responsible for the harvesting of baobab fibre while women and children were mainly responsible for the collection of fruits for sale. Granting of rights to access small volumes of fruits around the homestead to outsiders was usually the prerogative of women.

Inter-household level

Access to products from baobab trees around homesteads was negotiated with the homestead owner. The demarcation between homesteads was usually a perimeter fence. While terms of payment for accessing the homestead trees differed between homesteads, often an equitable sharing of harvest between harvester and homestead owner was used.

For fruit and bark harvesting, access was regulated through allotment size. The household head set a limit to the quantity of resources one could harvest. The guiding principle was a local axiom – "*Munzara haapinzwi mudura* (you do not give a hungry person unfettered access to the granary)." The reasoning, which became popular with the commercial use of fruit and fibre, was that approaching someone for permission to harvest baobab products around the homestead was an indication of desperation. So, a desperate harvester would be tempted to over-harvest to maximize their yield, and therefore there was a need to closely monitor the harvesting pattern.

Fruits around the homestead were usually for local use, but in certain cases, access by other residents could be negotiated between homestead owner and fruit collector. Inter-household negotiation for access to bark was common in Nyanyadzi. Commodification of fibre around a homestead has been a recent development, for financial gain by those endowed with trees around their homesteads. For fibre the husband usually decided, while for fruits, tubers, and leaves it was usually the wife or adult children. For leaves and tubers, access was usually free but out of courtesy, the harvester asked for permission from the homestead owner if these were harvested close to someone's homestead. This gendered access-granting arrangement made it easy for harvesters and resource owners to negotiate.

Access to trees in crop fields was complex. There was speculation among informants in Nyanyadzi that the reason why some families grew crops each year when the crops always failed was to gain legitimacy over baobab products in those fields. Crop fields were out of bounds during the cropping season provided the field was under some crop. So, the field owners enjoyed some exclusive rights over the baobab fruits until about April when the fields reverted to communal ownership. The same was noted in Jinga. One woman confirmed that one reason she ploughed her field yearly was to have exclusive access to *Berchimia discolor*

fruits. She even swept under the tree to make sure that the fruits fell on clean ground for hygienic reasons and easy of picking. "I do not expect a normal person to come and pick up fruits from an area I would have cleaned alone," she remarked.

Money could also be used to gain access to baobab products in communal areas in Nyanyadzi. Harvesters confided that they sometimes paid an expedite fee to village heads. Traditional leaders did not readily acknowledge receipt of the expedite fees which ranged from a scud to about $5.[90]

In all negotiations, parties involved had to know and trust each other. Thus, if a harvester was connected to many people in the village, s/he had several options that could be explored to get access to baobab products. Trust was often found among people who belonged to the same group such as church members, members of a revolving fund, burial society, or craft traders' group. Therefore, harvesters who belonged to several groups tended to negotiate and gain access from many sources, drawing on their social capital. An example was Mrs. M. who held several positions in the organisations in which she belonged; fruits and fibre were harvested from different sources, drawing on her range of social contacts in her village (Figure 9).

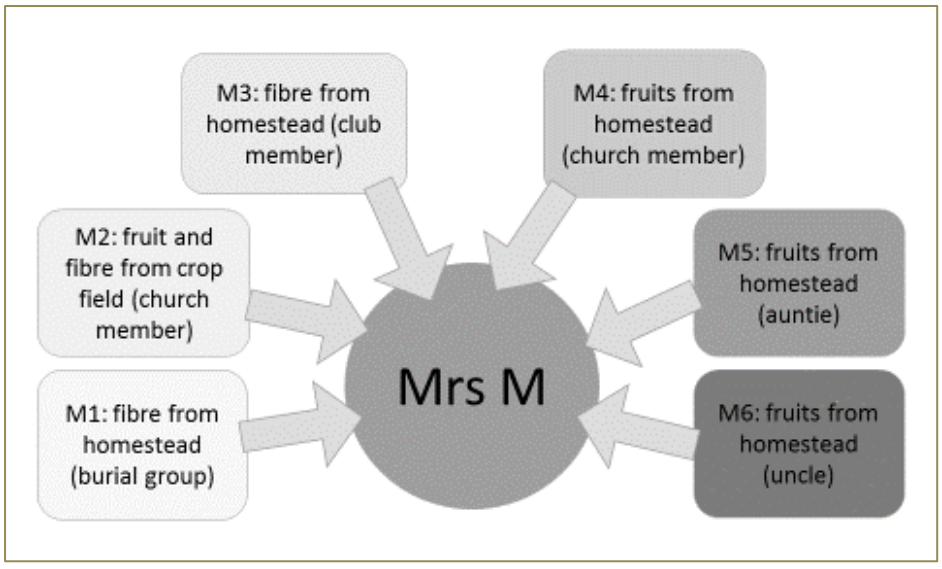


Fig. 9: Mrs. M's use of social capital to access baobab products for sale

[90] Opaque beer sold in a container called a "scud", to denote that the beer hits hard like the Iraqi scud missile.

In return for accessing the various baobab products from various people, Mrs M, a respected widow, sometimes provided advice on how to make and sell baobab products. In church, she led women's prayer groups where she championed developmental projects for disadvantaged women like widows. She also provided marketing information on crafts to people like Mr. M1 and Mrs M2.

In Jinga, all harvesting of fruits and bark was done in communal areas and crop fields on account of there being no trees located around homesteads. Human settlements were located in areas that do not have baobab trees. For trees in crop fields, harvesting was prohibited during the cropping season as harvesters could end up trampling on crops. Once crops had been harvested, anyone from the village could have access to the fruits. For fibre, if a harvester wanted to harvest large volumes, permission had to be sought from the crop field owner who could put a limit on the amount of fibre to be harvested.

Chiukira: a case of self-exclusion in Nyanyadzi

Chiukira was a practice rooted in tradition and in the practice of *kusunza* – expeditions to seek food in food-secure areas in exchange for labour. With *Chiukira*, the commodity in short supply is not necessarily food and the harvester does not have to offer something in exchange for the product they want; they just draw on their social capital to access the product. Ethnic relations, and not the abundance of the resource per se, becomes the determining factor. This was a prevalent practice in Nyanyadzi. Fibre harvesters and fruit collectors crossed over to Chiefs Chamutsa and Chiadzwa's areas in Buhera and Marange Districts to get these two products. To recap, the people under Chamutsa and Chiadzwa are of the Gumbu clan. So, people from Nyanyadzi went and stayed with their relatives in Buhera while harvesting baobab products.

It was interesting to note that the Gumbu of Nyanyadzi would rather go and harvest bark from Buhera, and Marange, distances of more than 30 km, than go to closer Jinga, 20 km away which was endowed with many baobab trees. Bark harvesters argued that it was degrading to go and beg for fibre from the Garwe people who had a different culture to the Gumbu. The Gumbu regarded the Garwe as too proud to consider their plea for baobab products. On the other hand, the Garwe generally despised the Gumbu on the basis that the Gumbu borrowed

a number of cultures from the "inferior" Nguni people. To exemplify their assertion, the Garwe (until recently), pointed to the wearing of traditional multiple frill skirts (*zvikisa),* and body tattoos among the Gumbu, which is uncommon among the Garwe.

Sacredness as a control strategy

Sacredness was used to manage baobab trees. A sacred tree was one where some form of spirit was believed to be present. How a tree became sacred varied but usually involved spiritual significance. For example, a tree under which rituals were carried out was usually revered as sacred, as were baobab trees under which people were buried. Graveyards were the revered final resting place for the dead and trees in those areas could not be harvested. The sacredness of graveyards differed between commoners and traditional and spiritual leaders. While trees at graveyards of commoners in Nyanyadzi showed signs of heavy debarking, those at the cemetery for the royal Gumbu were well protected. To qualify their point, local traditional leaders in Nyanyadzi gave an account of some Chinese diamond prospectors, who, in 2011, tried to take soil samples from an area that was close to the burial ground of the ruling elite and were chased away by the traditional leaders. The ward councillor, a son of the ruling family, claimed that he contacted a weekly newspaper to publicise the story of the Chinese as a way to register the community's anger with the Chinese.[91]

Sacredness could also be invented. For example, a black spot in Nyanyadzi along the highway where fatal accidents had occurred became haunted and was therefore considered a sacred site. When driving past the spot, one was advised to rhetorically murmur something to allow safe passage. Trees around the area were considered sacred.

Anyone who harvested products from sacred trees was believed to develop a cargo cult mentality, a bad habit which could lead one to be a habitual thief. The belief was that if a harvester collected forest products from a sacred place, it was akin to stealing from the spirits of that place. Everything from the sacred place was the property of the spirits of that vicinity, which could cast a bad spell on the harvester.

[91] (Irrigation scheme under: 2011)

Ordinarily, there were a number of specific practices and activities that were not permitted around sacred trees. Taboos were used to ensure conformity to the rules around sacred trees. Such taboos usually related to how and what level of access could be enjoyed and by who.

In Jinga and Nyanyadzi, women beyond menopause enjoyed some level of unfettered access to fruits from sacred trees, but only after murmuring some words to the effect of excusing herself for "picking up fruits" from the resting place for the dead[92]. The belief was that old women were sinless "like angels," and were responsible enough to know how to share so they should be allowed access to the baobab products they needed. In Jinga, trees that produced sweet fruits were revered and had names that denoted the sweetness of the fruits. Fruit collection for domestic consumption was allowed from these sacred trees. Bark harvesting was not allowed, nor was harvesting of unripe fruits. A big snake was said to exist at one of the revered baobab trees. Anyone who defiled the sacred tree would allegedly be bitten by the snake.

In both Jinga and Nyanyadzi, traditional leaders had supreme decision over how baobab trees were used. They could override an individual resident's decision. For example, if a resident overharvested bark from trees around his or her homestead, the village head could put a moratorium on bark harvesting on that individual.

7.8 Statutory regulatory practices of baobab products at community level

In Chimanimani District, the district council played a part in the governance of baobab trees. The state explained that its intervention in baobab management was to avoid environmental degradation and possible local extinction of the baobab tree in the Nyanyadzi area (CRDC, 2012).

The RDC's regulatory framework for baobab use was informed by several key Acts, namely the Rural District Council Act, Environmental Management Act, Traditional Leaders Act, Communal Forest Produce Act, Communal Lands Act, and the Forestry Act (Chapter 4). To operationalise these Acts, the RDC used a number of strategies and instruments including

[92] Mukamuri and Kozanayi, (2014) also noted that among the Ndau the harvesting of *Warburgia salutaris*-valuable medicinal trees is shrouded in many rituals which are grounded on conservation philosophies.

planting baobabs, crafting by-laws, mounting road blocks to impound illegally harvested fibre as well as imposing levies and fines on resource harvesters. As shown below, the initial approach was confrontational, followed by the adoption of an all-inclusive model. Most of the instruments were meant to regulate baobab bark fibre use, rather than fruits.

7.8.1 Mounting of road blocks

Occasionally, in the early 2000s, the FC, EMA and the RDC set up road blocks along the Mutare-Chipinge highway, arresting anyone caught with large volumes of baobab fruits or bark without a written permit. Mainly, the targets were traders from Marange, who came to sell bark in Nyanyadzi. The FC impounded all illegally-harvested fibre and imposed a fine on harvesters. That strategy did not achieve much. These were occasional raids, and the FC and its partners were operating from Chimanimani, some 120 km away, so it did not deter harvesters. Harvesters reported that they would maximise the period that the FC was not monitoring to harvest as much fibre and fruits as they could. Also, to circumvent the restrictions and penalties, harvesters started to use new routes that avoided the main highway when transporting fibre. Restrictions on the baobab fibre trade, for example, through road blocks and fines, most probably affected poorer households who were mainly involved in this activity. It also affected the institution of *Chiukira* which was used by locals to access baobab products from neighbouring areas.

7.8.2 Local by-laws and the creation of Ward Environmental Management Committees (WEMECs) in Nyanyadzi.

Residents of Nyanyadzi crafted local by-laws in 2004 with the help of EAfrica, the RDC, EMA, and the FC. The motive for developing the by-laws was largely to protect baobab trees from excessive debarking. The by-laws were also meant to regulate commercial trading of baobab fruit outside the ward.

The role of WEMECs

For the purpose of enforcing the by-laws, and in accordance with the Communal Lands Forest Produce Act (section 19) WEMECs were formed in Nyanyadzi. Some villages such as Dirikwe reported that they ended up electing Village Environmental Management Committees

(VEMECs) for effective enforcement of the by-laws. These were elected positions and this extra layer of authority failed to take off as it did not integrate well within the existing political structures of traditional leaders.

Local Permit system

A key provision of the by-laws was the requirement that permission be given by way of written authority (a stamped letter or receipt) from either the village head, headman, chief, or ward councillor. This meant that every harvester had to visit these authorities to get written authority before they went out to harvest. Some people lived far away from the authorities and it was a challenge for them to get the permits. To grant permission, the traditional leaders and ward councillors were supposed to consult WEMEC, and the council of elders that supported the village head in the discharge of his duty. This somewhat cumbersome arrangement in the by-laws resulted in some harvesters taking advantage of the numerous centres of authority to "forum shop" for different options to get access to baobab products. For example, if a harvester thought they stood a good chance of being granted permission for access, they approached WEMEC instead of the village head. This created conflicts between the traditional authorities and the newly elected WEMECs.

Fiscal issues were not devolved to the local level by-laws. These stated that all fines and levies had to be collected by the RDC. The headman only handled the money from levies on behalf of the RDC. The council decided how the money that accrued to the community was used. Traditional leaders were encouraged to impose non-monetary fines as per African tradition. The non-collection of cash fines by local leaders was a contentious issue that traditional leaders were livid about. Traditional leaders complained that they never got paid for the work they did to conserve the baobab tree. They argued that the RDC did not remit the community share of levies collected as provided for in the by-laws. Furthermore, traditional leaders expressed some reservations about the commitment of WEMECs. Headman K of Nyanyadzi observed, "We note that the RDC is forming committees to manage natural resources but without incentives, there is no commitment from the elected leaders."

Residents from outside Nyanyadzi were not allowed to harvest baobab products from the ward with exceptional cases only being approved by the village heads, headmen, or ward

councilors upon payment of a permit fee of $10. The by-laws also called on harvesters to observe any cultural, spiritual, and traditional values that were attached to the baobab tree.

Another provision in the by-laws was that harvesters were to be organised into groups of 5 to 6 members for the purpose of coordinating their harvesting operations and payment of levies to Council. Every group member paid a joining fee of $10 and an annual marketing fee of $20. The fee from the registration and licensing of harvesters was meant to generate money to support environmental programmes for the benefit of the community. Revenue collection was centralised as resource users were expected to travel to Chimanimani (120km away) to pay their marketing levies. Later on, a satellite office was established at Nyanyadzi, but that also did not improve the inflow of levies, reportedly due to weak enforcement from RDC authorities.

Forty (40.0)% of the funds raised from the levies accrued to the RDC to cover administrative costs while 60.0% was supposed to be remitted to the community. A community fund was created, under the stewardship of the headman. The traditional leadership was entitled to 25.0% of the amount allocated to the community trust fund while 75.0% was supposed to be ploughed back into the community for development purposes. However, Mr. N confided, "for all the 4 years I was the council vice chairperson, we never gave back money to communities. There was always no money. Only $140 was raised in the whole of 2011. The RDC's revenue collection from baobab use is very low. At its peak, it was less than 20.0% of the potential value."

Most residents in Nyanyadzi shunned marketing groups. Results from a household survey revealed that only 17.6 % of the households belonged to these groups. Initially, in 2004, 11 groups were formed in Nyanyadzi but most of these groups failed to take off due to a lack of group solidarity, coupled with weak monitoring and technical support by the RDC. As of 2012, only five groups were still operational.

Sometimes, political power was used to gain access to baobab products. The youth argued that having unfettered access to baobab fibre was part of the broader indigenisation programme which was promoted by government. Such politically-connected unsanctioned harvesting went unpunished by all the local authorities who always remarked thus,

"*ngezvematongerwe enyika*, it is political, so it's a hot potato." The same sentiments were expressed by district level officials from the FC, EMA, and the RDC who claimed that to enforce the existing rules to the letter would take them on a collision course with politicians.

7.8.3 Permit systems by the government for harvesting and marketing products

The FC regulated use of baobab products through issuing harvesting permits to 'bulk' harvesters upon payment of an inspection fee of $20. The harvester would then have to pay for a movement permit to be able to move the resource from one area to another. Exporters of bark or crafts had to pay $10 or 1.0 % of the value of the goods to be exported (or whichever of the two was greater) to the FC.[93] If caught without a permit, a fine of $30 was imposed, regardless of quantities involved.

For the export of baobab crafts, traders further paid for a fumigation certificate which was obtained in Mutare, the provincial capital which was 120 km away from Nyanyadzi, a distance that cost at least $10 for a round trip. This presented a challenge to cross border traders, especially poor people. As observed by one informant (personal communication, 2/3/12), "How can the FC expect someone who has never been to Mutare because of poverty to suddenly go there to get a permit to sell baobab fibre crafts?"

Further, the marketing of crafts along the highway went under the radar; craft traders displayed poor quality crafts to minimize their loss if these were confiscated by the RDC for non-payment of the marketing levy. At the national border, illegal routes were used to avoid paying customs duty, while other cross-border traders engaged in corrupt dealings with customs officials. In the process, the local authority lost out on potential revenue which it could get through taxes and levies charged on resource users and traders.

7.8.4 Softening of stance by the state

Around 2006, EMA and the RDC had to change their tactics when dealing with baobab harvesters. It took these institutions about 15 years to shift from being confrontational with harvesters to being able to embrace local people's practices in baobab management. They

[93] See Kozanayi *et al*, 2014) for a detailed account of this complicated permit system.

adopted a conciliatory tone towards the harvesters, because they had come to recognise that, "We need to promote use of indigenous knowledge in the management of the baobab products, as provided for in EMA."[94]

The FC officer commented, "I am in a tricky situation. You know they say once a forester, always a forester. If there are no trees around, then I become irrelevant as a forester. But we cannot say to the local people do not debark the baobab trees, all we say is harvest but come up with a management system that ensures ecological sustainability."[95] These statements by the FC and EMA officers seemed to epitomise the policy shift in government towards a more accommodating approach.

7.9 Perceptions on fairness of governance practices

Fairness of rules was assessed from different actors. Differences in motives gave rise to differences on perceptions of fairness. Overall, 27.2% of households that were interviewed believed customary practices to be always fair, while 18.4% were of the view that the practices were fair, but not all the time. A total of 21.1% of households felt customary practices were unfair, while 33.3% were indifferent. For statutory forms of governance, only 11.6% households considered them to be consistently fair, with 15.3% saying they were fair but not all the time. A total of 20.6 % viewed them to be unfair, while 52.4% were indifferent. Both forms of governance were unfair to the majority of the respondents; this could be an indication of the inherent weaknesses of the two practices.

In Nyanyadzi, Ward councillors believed that any rules that deterred locals from harvesting baobab would be viewed as unfair and contested. Attempts by the state to put a complete ban on bark harvesting were thus viewed as unfair and therefore, unpopular. Customary practices were regarded as fair because they allowed the commercial harvesting of fruits and therefore addressed the welfare needs of the local people. However, there were discernible undercurrents of disgruntlement from non-dominant groups such as women and recent immigrants. They claimed that traditional leaders were corrupt and nepotistic. Traditional

[94] EMA officer, 3 January 2011.
[95] The District Forester for Chimanimani during an interview on 3 January 2011.

leaders and their relatives reportedly violated established rules and practices and did not get written permits to harvest fibre.

With regard to statutory systems, most residents in Jinga were indifferent because the state was conspicuously absent from the area. The only time the state was active in Jinga was in the late 1980s when the EMA intervened to ban locals who had embarked on charcoal trading. Customary practices were conducive as far as harvesting of products for domestic use was concerned.

7.10 Rule formulation and enforcement

Table 28 below presents results of a survey that captured residents' perceptions on the institutions that established and enforced the arrangements that were used to regulate the use of baobab products. Enforcement was taken to mean the degree to which sanctions were imposed if standing rules were violated (Ostrom, 1990; Jagger *et al.*, 2014).

Table 28: Participation of institutions in rule formulation and enforcement in Nyanyadzi and Jinga

Institution	Percent of setting up rules	Percent of enforcing the rules
WEMEC	6.1	16.3
Village head	41.0	58.4
Headman	4.5	7.9
Ward councillor	2.3	3.2
FC	30.9	4.7
EMA	3.9	1.5
RDC	7.3	1.1
NGOs	1.7	1.1
Individual households	2.3	5.8
Total	**100**	**100**

Overall, the majority of the respondents (41.0%) regarded traditional leaders as the main source of rules used to regulate baobab use, followed by the FC (30.9%). Village heads were also the main institution responsible for enforcing the rules (58.4%). The state was reported

to be inconsistent in the way it developed and enforced its rules. In Nyanyadzi where the RDC was visible, one headman cautioned, *"Pore ne Kanzuru, chirungu manyoka* (Take it easy with the Council, enforcement of its rules is ephemeral like a running stomach)." Informants reported that after advising locals of new policies, the RDC went away with no or little follow up. This discouraged locals from respecting the statutory rules. A small number of households (2.3%) were formulating rules, especially to regulate harvesting of products from trees around their homesteads. This was concomitant with the rise in commodification of baobab products in and around homesteads.

7.10.1 Enforcement of rules

The enforcement of rules and the prosecution of offenders by both the RDC and traditional leaders was low. From the household survey 95.8 % of the households reported not having been arrested or fined in 2011. This was surprising considering the violation of rules in Nyanyadzi. For example, trees were clearly debarked without adhering to the two-year resting period. Of those who were arrested, 7.5% paid a fine while 3.2% said they "talked" which was a euphemism for paying a bribe to have their case dropped. The rest did not pay.

According to the FC Officer (quoting the Forestry Act 19:09, Section 17), only designated officers, namely, the police, EMA, and the FC had arresting powers. All of these institutions, except the police, were located more than 100km from the study site. WEMECs as a local level structure of the RDC was mandated to arrest offenders by issuing them with tickets for the offence committed. But the fine itself was paid to the Chimanimani RDC. In Nyanyadzi, WEMEC officers were demotivated due to a lack of remuneration, and faced many challenges such as threats of physical and verbal abuse, being bewitched, as well as straining their relationship with fellow residents. The chairperson for Nyanyadzi WEMEC aptly stated this view, "at the end of the day I leave with my relatives and neighbours while the RDC is stationed far away from us. So, if I strain my relations with my neighbours who will help me in the hour of need?" WEMECS were also viewed by locals as an imposition from a council that was determined to usurp management rights from traditional leaders.

There were instances where force was used to ensure compliance. To deal with an influx of bark harvesters from Nyanyadzi, village head P in Chishanyi area, Buhera, reportedly armed

himself with a gun and threatened to shoot anyone he caught poaching fibre in his village. He patrolled his village and if he caught anyone harvesting fibre he burned it. Because of his supposed fiery temperament, bark harvesters stopped going to that village. He passed on after a short illness and some bark harvesters from Nyanyadzi suspected that he was killed by the spirits of the land for the heavy handedness with which he dealt with transgressors.

For its part, the RDC reported that the cost of collecting fines was unsustainable vis-a-vis their budgets. “As part of the government we work with budgets. If the fine to be collected is small, I will not go and collect it, if it is high enough to warrant driving down I will go collect it,” said the FC officer. The fines established in RDC environmental by-laws for most offences did not exceed level 3 in the schedule of fines that is usually ranging between $5 and $20.

Traditional leaders in Nyanyadzi felt that the RDC’s process of fining offenders was bureaucratic, which discouraged transgressors to comply. The process was described by village head Q, “When it comes to decision making, the government walks and never runs, it has no urgency.” Transgressors had to travel to Chimanimani, over 100km way to pay fines.

7.11 Awareness of the rules

In Nyanyadzi, 22.9% of households were aware of statutory rules, with 19.1% being uncertain about whether what they knew was correct or not, while the majority (58.0%) were unaware. In total 42.1% of the respondents were aware of customary practices, while 12.7% were uncertain. For Jinga, 54.4% of the households were aware of the customary practices around baobabs compared to 15.0% who were aware of the statutory rules.

During discussions, traditional leaders appeared ignorant of the full range of their powers as they bemoaned their lack of legal power to effectively manage natural resources in their villages despite being re-empowered through the enactment of the TLA, EMA, CLFPA and the RDC Act.

7.12 Discussion

7.12.1 Customary practices and use of historical relations to access baobab products

Access to baobab products was regulated by a number of customary practices, some of which were rooted in historical ties. According to Govo *et al*. (2015), among the Shona of Zimbabwe the elements of totems, kinship, and clans are still highly regarded, as these give rural societies a sense of oneness, unity, and belonging. Overall, historical narratives around kinship ties have been used to assert or claim access rights to natural resources in many areas (Berry, 1997), including fishing zones (Sunde, 2014) and state forests (Matose, 2002). However, the practice of *chiukira* is a unique and interesting one. Usually, access is conceptualised in common property debates as an exclusionary mode whereby the disadvantaged suffer impaired access because of exclusion by some powerful right bearers (Ostrom, 2000; Ribot & Peluso, 2003; Geschiere & Stephen, 2006). *Chiukira* shows that beyond exclusion by right bearers or those presumed as powerful, some people may actively self-exclude themselves on cultural grounds, that is through shunning any association with those they look down upon. Cultural identity and pride are some of the main reasons behind the Gumbu's shunning baobab products from Jinga, a village endowed with baobab products. This observation can be explained in terms of Nielsen (2006) and Ncube (2014)'s explanation that culture may explain why some people do certain things and yet others facing similar conditions do not (that is the contrast between the Garwe and Gumbu).

7.12.2 Groups as organising units

Because social networks are strong among the Ndau (MacGonagle, 2007), groups still stand out as important organising units for conservation initiatives (for example Figure 8, Box 6). Resource harvesters may join together in order to achieve their individual goals (Nyangena & Sterner, 2008; Cronkelton & Larson, 2015). These goals can be economic alliances, as is the case with *mukando*, which unlocks economic potential of group members. Even at village level, social ties are critical in accessing baobab products, as illustrated in Box 5 and Figure 8 and the *chiukira* arrangement. This conforms to what has been observed in literature – that social networks offer security (Bromley, 2008) and unlock economic potential (Dasgupta, 2000).

7.12.3 Complexity of relationships among local actors

Though residents derive benefits from being in groups, among the residents themselves dichotomous relations were discerned between locals and immigrants. Results from this study also demonstrate that accusations that immigrants' defiance of local customary practices results in a breakdown of rules is a fiction that is conveniently used by the locals. The immigrants also gave accounts of how the natives, particularly from the royal family, violated local rules protected by the fact that they were immune to prosecution. As has been demonstrated by MacGonagle (2007:207), "Ndauness has been created and recreated within communities through marriages and social structures, cultural practices, and rituals." Recent immigrants saw a culture that was no longer pristine, albeit still intact (MacGonagale, 2007), and to blame them for a breakdown of local practices (Figure 7) is disingenuous.

Further, traditional leaders had their own leadership conflicts, particularly in Nyanyadzi. When these conflicts play out in the natural resource arena, as was the case in Nyanyadzi, it affected baobab conservation.

Jinga provides important insights into the impact of having one centre of power. While modest progress has been made in regulating baobab use, a ban on any commercial selling of fruits (Box 3) has negatively impacted residents' potential revenue. In Jinga village, households got an average of $33 per year from the sale of baobab products, compared to $233 for residents of Nyanyadzi. To further put this into perspective, in Jinga, baobab trees produce 250.0 % more fruit than those in Nyanyadzi (Chapter 6) which in theory means more income for Jinga residents. Jinga's case confirms research results that show that excessive regulation of access to natural resources has negative returns for local people (Ndoye & Awono, 2010; Robinson *et al.*, 2013).

7.12.4 Statutory practices regulating access

Notions of resource degradation and the inequitable distribution of benefits influenced the state's decision to intervene in regulating baobab use in Nyanyadzi. Later on, when

commercial fruit harvesting started in earnest in 2004 in Nyanyadzi[96], the CRDC got more involved in regulating the harvesting of baobab products in order to ensure equitable distribution of benefits from the fruit sales among stakeholders, one of whom was the RDC. The reasons for formalising NTFP use are consistent with the observations of Hara *et al*. (2009) and Wynberg *et al*. (2015) that ecological concerns, social justice factors, and economic considerations are the priorities. The statutory rules and by laws seem to be overly concerned with regulating fibre harvesting, and revenue generation.

Considering the deep cultural role of baobab among the Gumbu, a framework that does not include local interests presents a challenge in baobab governance. Attempts by the RDC to put a moratorium on bark harvesting, oblivious of the deep-rooted role that fibre crafts play in the cultural history of the Gumbu people, was one obvious policy blind spot. As noted by Dore (2001), any policy intervention that is insensitive to local context is bound to fail. We can attribute the weaknesses of statutory rules to this policy oversight.

Another blind spot of the state's intervention was the fact that baobab tree-use boundaries transcend administrative boundaries. These findings concur with what Mandondo (1997) found in Nyamaropa, Zimbabwe where he noted that resource-use boundaries overlap and wane in response to demand. The fluidity in resource-use boundaries was one coping strategy for customary practices which made them adaptive to resource-use change and pressure. In terms of key theoretical debates on common property resources, this is contrary to the fixed and clearly defined boundaries advocated in the design principles by Ostrom (1990) which have been used to guide and shape resource use in communal settings.

In addition, the state intervened in Nyanyadzi with heavy handedness, typical of what Wynberg *et al*. (2015) observed as over-regulation of natural resources by the state in many rural areas. A cumbersome permit system for one to harvest, move, and market products both within and outside the country was put in place. This complex permitting system had a number of unintended consequences. In short, the bureaucratic processes to get permits

[96] 2004 is when SAFIRE started promoting the harvesting and selling of baobab fruits to companies like Speciality Food Africa. Some local entrepreneurs were supported with loans and machinery to process pulp and oil for the export market.

provided perverse incentives for harvesters to break existing rules and engage in corrupt activities. In the process, marginal groups like women were exploited.[97]

Other unintended outcomes of the intervention by the state are worth noting. First, bark harvesting spread beyond Nyanyadzi as residents from Chipinge and Buhera Districts started supplying weavers in Nyanyandzi with baobab fibre. Second, there was overharvesting of baobab fibre, up to branch level (Plate 8.1) by those who had paid for the harvesting permit ostensibly to recoup the money they used to pay for the permit.

There is strong recognition of the feuding between traditional leaders and the RDC (Mukamuri *et al*, 1998; Hughes, 2001). A pertinent source of conflict between the two institutions is fiscal oversight. The RDC claims for itself money and responsibilities earmarked for the local people despite the fact that the Traditional Leaders Act and the ward by-laws in Nyanyadzi bestow some fiscal responsibilities on traditional leaders. Yet the TLA (Chapter 29:17) Section 12, subsection (1j) mandates village heads to collect levies, taxes, and other charges payable in terms of the RDC Act (Chapter 29:13). Traditional leaders have also shown good accounting systems with the hut tax (Makahamadze *et al*., 2009) which allays any fears of misappropriation of funds.

Related to the above is the failure by the RDC to remit the community's share of revenue collected as fines or levies; this is a source of disillusionment among traditional leaders and residents in Nyanyadzi. This disenchantment breeds corruption involving resource harvesters and traditional leaders. The expedite fees paid to traditional leaders by resource harvesters are one of the corrupt practices involving local leaders.

Weak monitoring and enforcement of rules by the RDC also contributed to corrupt activities (Ostrom, 1990; Nemarundwe, 2003). Monetary and human costs were usually deterrents. In Chimanimani, field operations were carried out with shoestring budgets which forced officers to limit the number of trips they made into the field even to collect fines, which were "usually too small to justify such mileage" (Mr. O). Linked to this was reluctance by elected officials

[97] For example, some women stopped going to South Africa to sell their crafts because they were asked for sexual favours at the border by "*malaitshas*" who facilitate illegal movement across the border (Kozanayi *et al.*, 2015).

(WEMECs and Ward councillors) and the RDC to enforce policies that would cost politicians political capital.

7.12.5 Interface between customary and statutory practices

There was a pervasiveness of linkages and conflicts between formal and informal institutions. Traditional leaders appealed for the strengthening of customary practices from the RDC, particularly through formal recognition of customary practices. On the other hand, the RDC's willingness to collaborate with traditional systems was shown through its conciliatory tone when urging local residents to recognise traditional rules when harvesting baobab products. The two forms of governance accommodated each other, although traditional leaders cautioned against wholesome adoption of statutory rules by saying, "*chirungu manyoka* – statutory rules can be ephemeral." Conflicts arose mainly over fiscal responsibility and the philosophy underlying conservation policies and models.

Overall, there were integrative and conflicting linkages between the customary and statutory forms of governance regulating baobab products.

7.13 Conclusion

The chapter concludes that statutory and customary forms of governance interact in complex ways that produce different outcomes. Such interactions include phases of collaboration and conflicting which renders access to the various baobab products a continuous negotiated process. Regulatory mechanisms included soft controls and hard rules. Locally, there was dependence on taboos and mores, which statutory forms, relying on scientific practices, is quick to dismiss as irrational (Mawere, 2013) to protect the environment. Related to this was the use of counterfactual methods, such as allowing errant behaviour in order to invoke punishment from the spirits of the land. Such approaches are at the centre of local people's cognitive understanding of the environment-spirit nexus. A number of statutory tools (rules, by laws, moratoria and policies) used to regulate access to baobab products were identified and explained.

Overall, the account of customary practices given in this chapter shows that, largely due to political and use pressure and conflict, institutions undergo alternate phases of effectiveness

and ineffectiveness or, in the eyes of the resource users, legitimacy and illegitimacy.[98] The implication of using customary and statutory forms of governance is discussed in Chapter 8 within the framework of broader governance debates underpinning this study.

[98] This is consistent with the observation by Hirchman (1970) and Le Grand (2003) that every institution has moments or inherent traits of lapses from efficient to dysfunctional. Every resource user learns to live with a certain amount of dysfunctionality in the system, beyond which they start to act.

CHAPTER 8: DISCUSSION

This chapter provides a synthesis of the findings and relates them to the broader theoretical debates described in Chapter Two. In doing so, the discussion focuses on three themes, namely: 1) the factors that shape the relationship between customary practices and statutory forms of resource governance; 2) the ecological and livelihood outcomes of this interplay; and 3) an analysis of the implications of using the two forms of governance.

8.1 Factors shaping the relationship between customary and statutory governance.

8.1.1 Strength of traditional authorities

The commercialization of baobab use strains customary practices while the resilience of customary practices depends on the type of traditional authority in place. A traditional authority that has a clear centre of power and has minimal interference from the state is important in ensuring the effective enforcement of customary practices and rules. In Jinga, for example, a clear and effective traditional authority structure operated with minimal interference from the state, and baobab was sustainably used. Although harvesting was mainly limited to domestic use in Jinga, there were signs that the traditional authority was able to effectively regulate use, adjusting to the rise in demand through decentralising power to two women. This was different from Nyanyadzi where there were several traditional authorities, some engaged in power struggle; here the state was strongly involved and there were significant ecological challenges. The breakdown of customary practices in Nyanyadzi occurred at about the same time as the state intervened in the governance of the baobab. The pattern of this breakdown, combined with historical accounts given by local people, suggests that the state's intervention had a role to play in the weakening of customary practices in Nyanyadzi. In Nyanyadzi informants were equivocal about the relationship between state regulation of baobab harvesting and over harvesting. The main conclusion drawn from the two scenarios is that for customary practices to cope with commercial harvesting, the state needs to consider customary forms of governance before it imposes new institutional arrangements drawn from the statute books. Uninformed interventions by the state may weaken traditional authorities and override local resource sharing arrangements. Overall, this is confirmed by evidence elsewhere. In Cameroon, for example, Brown and

Lassoie (2010) show that customary systems undergo strain with the commercialization of Non-Timber Forest Products (NTFPs).

8.1.2 Overregulation by the state

Overly restrictive governance is abhorred by harvesters, even if done by individuals or traditional leaders and leads to unintended social and ecological consequences. This is because excessive regulation results in compromised livelihoods. Overregulation by the state in Nyanyadzi and at a national level through a stringent export permit system has affected those who are weakest in the baobab value chain. Women who were engaged in cross border trading, for example, gave up involvement in the baobab trade and resorted to selling their crafts locally. Similar results of marginalisation of already disadvantaged groups because of overregulation by the state have been found elsewhere. Ndoye and Awono (2010) note that in Cameroon, excessive regulation of the NTFP trade resulted in corruption and reduced revenue to the state. In Jinga where commercial trading of baobab products is not allowed, the village head still made provision to grant permission to special cases. Denying residents access to natural resources is against the cultural values and principles of the Ndau. The case of village head P from Buhera who used excessive force to keep Nyanyadzi harvesters from accessing baobab products from his area is a case in point. When the village head passed on, some residents in Nyanyadzi celebrated, something which is a taboo in the local culture. Several cases from across Zimbabwe of residents who have used subtle ways to protest against excessively restrictive resource governance have been documented (Matose, 1994; 2002; Nemarundwe & Kozanayi, 2003; Mandondo & Kozanayi, 2006). After Giddens (1984), it is argued that in most cases, resource harvesters are able to resist unfavourable governance through agency.

8.1.3 Exogenous factors

The strength of TAs, inter alia, is affected by external factors in the macro-economic environment, and the participation of intermediary organisations in the governance of natural resources. The loss of formal jobs due to the economic meltdown and annexation of former commercial farms by the state resulted in many people resettling in rural areas such as Nyanyadzi where they started harvesting baobab to earn a living (e.g. Mrs. E). This put

more pressure on the baobab tree and strained local forms of governance. At the time of the study, the Zimbabwe economy was in a coma which Jones (2010) aptly called the "*kukiya kiya* economy" to denote the various "making do" activities that everyone in the country was embarking on in order to survive. Because the country's economy was stagnant, argued Jones (2010), the middle-income class was eroded. Driven as much by a discourse of necessity, the middle class pursued activities they would not consider under normal circumstances in order to supplement their meagre salaries. Although this seemingly contradicts evidence in the literature that points to the trend that the poor are disproportionately dependent on forests (Cavendish, 2000; Campbell *et al*., 2002b; Belcher *et al.,* 2005; and Belcher & Hogarth, 2013), it also affirms the view that NTFPs are often seen as safety net in times of shocks.

Debates on governance do not usually acknowledge the role of civil society in the governance of natural resources, yet these are important "intermediary organisations" (Laird *et al.,* 2010:370), which facilitate dialogue between the state and other actors. They also help TAs in their discharge of duty. The present study shows the important role played by intermediary organisations (e.g. SAFIRE, and EAfrica) in law formation and implementation. This finding builds on the growing cases of the successes of Non-Governmental Organisations (NGOs) and local organisations in the governance of natural resources. Such organisations represent another layer of authority intermingled with customary practices and laws. Wynberg and van Niekerk (2014), illustrate how two NGOs, the African Centre for Biosafety (ACB), and Biowatch played a pivotal role in raising awareness on the unfair practices by the private sector in the harvesting and trade of Pelargonium and Hoodia, two NTFPs that have significant markets. Consequent to the involvement of ACB and Biowatch, enabling policies that recognised the contribution of local indigenous knowledge were promulgated by the state. It should however be noted that because of the short-term nature of NGO projects, their role is limited to a very short phase of the governance process, in contrast to the continuous and interactive process required for long-term engagement.

8.1.4 Time and responsiveness of different governance systems

A major difference between customary and statutory systems is the time taken for such systems to adjust or reconfigure themselves when situations change and adaptation is needed. Such changes include high demand for natural products to meet demand for super

foods in international markets. De Koning (2014) suggests that adjustment will take three forms, namely aggregation (coming together), alteration (adjusting to accommodate the other) and articulation (incompatible with the other). Statutory and customary systems will respond very differently. Statutory forms of governance are typically static and take long to change. In this case, they were less adaptive than customary forms of governance. As aptly captured by an informant in Nyanyadzi, the state does not show urgency with policy: "Council does not run, it walks" (Chapter 7). This local observation resonates well with a long-held observation by Murphree and Mazambani (2002), who, from their study of Rural District Councils (RDCs), noted that, in its dealings, the state uses bureaucracy and established ways of doing things. Part of that bureaucracy involves disregard for local level customary practices, qualifying to be some form of articulation (de Koning, 2014). Pierce and Burgener (2010) note that globally, most states are inefficient at enforcing environmental policy because of the range of different government departments which are responsible for regulating NTFPs and the associated bureaucratic processes linked to different laws. A review of some commercialised NTFPs indicates that the state is often slow to act and when it does so, it does it with heavy handedness, making blanket provisions for all people in communities which creates social injustice as weaker groups are further marginalised from accessing natural resources. Wynberg and van Niekerk (2014) reported that in South Africa, when *Hoodia* and *Pelargonium* were commercialised, the state only intervened when the resources were dwindling. The state intensified its interventions when resource degradation worsened. Ideally, the state should be pro-active to intervene and when it does that, the guiding principle could be "less is often more" (Wynberg & Laird, 2007), meaning a gradual but relevant level of intervention is enough to redress whatever governance problems there might be.

For customary forms of governance and TAs, adjustment times are shorter due to the flexibility characterising these systems. And because these are embedded in social and economic processes (Granovetter, 1989) customary practices and TAs are indeterminate as they evolve all the time. This suggests reinvention but not in the passive sense envisaged by Hobsbawm and Ranger (1983) in their seminal work on the invention of tradition. In this case, customary practices and traditional authority evolve on their own volition in order to adapt to changes in the environment.

Because they have agency, customary institutions and resource harvesters are reinventing themselves as espoused in Giddens' (1984) structuration theory. TAs for example, may contest some of the newly created positions of ward councillors, but recognise rather than stifle household level resource sharing arrangements, actions that represent alteration and aggregation according to de Koning, (2014). A gamut of local level resource-sharing arrangements in Nyanyadzi and Jinga were crafted from households, village and ward level arrangements (Chapter 7). These inter-household arrangements were particular for different parts of the tree to be accessed and specific family members responsible for enforcing for different tree products were identified. For example, rules were waived for vulnerable groups of people such as elderly women, widows and children; these groups were allowed to harvest fruits from sacred trees. As noted by Campbell *et al.* (2002b) rural people have an infinite resourcefulness to make ends meet, especially in the face of adversity which makes them adapt to rapid changes in their environment. This resourcefulness is usually missed in policy pronouncements and may explain why globally resource degradation continues despite there being a plethora of statutory practices to regulate access to natural resources.

Findings from Jinga and elsewhere (Bromely & Carnea, 1989; Byers *et al*., 2001; FAO, 2008) support the view that customary practices can sustainably regulate harvesting of products for domestic use. However, to handle the pressures that arise from commercial harvesting, it might be necessary for the state to come in to support the local arrangements in place, making sure its intervention facilitates and does not prohibit. As Treib *et al.* (2007:3) note, "Empirically, only hybrid forms may be found since one mode of governance always entails elements of other modes of governance". Aggregation and alteration (de Koning, 2014), appear to be the most plausible forms of interaction between customary and statutory forms of governance. The challenge has been that the state over-reacts when it intervenes, in some cases completely overriding the customary forms of governance. If the state intervenes with excessive force and does not have enough resources to effectively enforce its rules, resources are likely to be overexploited (Kajembe *et al.,* 1999).

Models that are sensitive to local arrangements are also needed to avoid a situation where "organisational structures have been copied from developed countries, not considering the completely different task they are confronted with" (Kooiman *et al*., 2008: 7). A preferred

scenario is having a mosaic of site-specific arrangements that are sensitive to local contexts. This calls for the avoidance of oversimplification of local complex realities and nuances that make local practices resilient and relevant.

8.1.5 Culture and beliefs

This study confirms that there is rich local knowledge about the uses of baobab products and the ecology of the tree. This can be used by policy makers to craft forms of governance that can be used to regulate appropriate access. This confirms earlier findings by Saxena *et al.* (2014) and Berkes (2004) that customary practices are important in the governance of natural resources because local people have a rich body of historical knowledge that needed to ensure ecological and economic sustainability.

The way local people use natural resources is also influenced by their belief systems and cultural values. These cultural values, which differ between communities, are important as they shape the framing of conservation and governance frameworks of local people. Examples suggest that cultural belief systems are at the heart of governance in many parts of the world (Andersen, 1996; Cocks *et al.,* 2012). Cocks *et al.* (2012: 1), for example, writing about the cultural and spiritual value of forests among the Xhosa of South Africa conclude thus,

> The benefits of being in nature were ascribed not only to the physical experience of the forest environment and its biota, but also to the presence of ancestral spirits. Being in nature thus contributes significantly to the physical, mental and spiritual well-being of local people, and is also integral to their sense of cultural identity. This study has made it clear that maintenance of biodiversity and natural vegetation is as much in the interest of the local community's well-being as it is in the interest of conservation planners.

Failure to appreciate this cognitive understanding of nature sometimes leads into differences in the meanings given to natural resources by local people, the state and other actors. Such differences give rise to struggles with the possibility that local people might use customary rights as arguments to gain access to resources. For example, local people in Nyanyadzi

argued that, “this is our fore fathers land so we have to take care of it” (Chapter 7), disregarding the authority of the RDC over the area. This observation resonates with what Kepe (2008: 965) found in South Africa: “In Pondoland, South Africa local people justify their actions by calling on customary rights, locally referred to as *ukujola* (legitimised stealing), which are based on historical claims predating the gazetting of the state land”. It can be inferred that some of the conflicts encountered at the local level might emanate from differences in conceptualisation of the environment-human nexus between the state and the local people. The state has a narrow view of natural resources as it is mainly driven by ecological and economic values of resources while local people have more nuanced views and interpretation of these resources including spiritual and cultural functions.

While customary practices have been widely regarded as only relevant to deal with low value, subsistence resources (Neumann & Hirsch, 2000; Ribot & Oyono, 2005; Brown & Lassoie, 2010), results show that they are also relevant in the context of commercial use. This is due to customary practices imbuing elements of dynamism, flexibility and conservation (abhorrence to plundering behaviour) when harvesting that ensure sustainable livelihoods and ecology.

This study reveals that despite use pressures and interactions with statutory forms of governance, the spiritual institutions of the land, *mhondoros,* are still at the centre of resource management in the Shona culture. (Bourdillon, 1998 and 1999).[99] Among the Ndau people from Chimanimani their cosmological beliefs or philosophies on natural resources provide a spiritual function by providing an immediate interface between the living and dead. This cognitive conceptualisation of nature through an immediate and delicate nexus between the users and powerful spirits of the land ensures compliance with existing customary practices, in particular sacredness.[100] The cosmological beliefs inform the philosophies that underpin strategies used to manage natural resources across scale. To that effect, customary practices

[99] Mystic spirits are central to ecological conservation in other societies outside Africa. The Chinese, for example, have a strong belief system where trees and rocks are believed to have their indwelling guardian spirits which may include dragons (Anderson, 1996).

[100] Kozanayi *et al*. (2014) for example report of how in 2010, the leadership of the United Methodist Church in Nyanyadzi had to approach the local traditional leaders for purposes of rapprochement after the church had chopped down a sacred tree to establish a creche. The roof of the creche was blown off by mysterious winds on two occasions before the church leaders consulted the traditional authorities.

require that at all times, even in scarcity, resources have to be used responsibly and equitably. These customary practices, though they infuse tenets of sustainable ecology and livelihoods, are typically quickly dismissed as irrational local beliefs by Western science (Mawere, 2013). Hara *et al*. (2009: 521), concur, "Although often condemned as environmentally unsustainable, economically unviable or socially anachronistic, this mode of natural resource tenure and governance remains vitally necessary in the livelihoods of the rural poor across much of the (African) region".

Globally, there is increasing evidence of local communities sustainably managing forests with minimum influence from the state, under different arrangements including community-based forestry initiatives (FAO, 2016). According to FAO (2015), in Nepal, local people now manage 30.0 % of the country's forest area after the government devolved power to over 95 million peasants. In The Gambia, a 1998 Forest Bill stipulates that 75.0% of forest land should be managed by communities. In 2010, an 8.5% increase in forestry cover was recorded as a consequence. In Latin America, an increasing area of forests is being put under the ownership of traditional communities, with evidence of sustainable use (Pacheco, 2012; FAO, 2016). Hagen (2014), quoted in FAO (2016), reports that communities in Latin America now legally manage 216 million hectares of forest, or one-third of the forest area.

The implication is that customary practices can regulate access to natural resources and where they are still strong, can deal with commercial pressures; in such cases the governance of natural resources can be left to local people with the state playing a supportive role.

8.1.6 Historical context

History and politics are usually neglected in the analysis of governance yet these profoundly shape current forms of governance and their outcomes. As the findings in this thesis reveal, history has played an important role in shaping customary and statutory forms of regulating baobab. As noted by Cleaver and de Koning (2015: 6), "history is at the centre of the study of governance - as colonial and post-colonial governments have interacted with traditional authorities in ways that have profound impacts on the governance of natural resources in communal areas". In Zimbabwe, pursuant to the arrival of colonial authorities in 1890, conservation of natural resources began to be based on Western scientific and neo-liberal

economic notions such as biodiversity conservation and revenue generation from tourists visiting national parks (Hara *et al*., 2009). Local traditional belief systems, myths, and mythological teachings, were readily undermined by Western world epistemologies that viewed local practices as irrational. The state usurped resource management responsibilities from the TAs from the colonial era and even after independence in 1980 and both eras were characterised by wanton destruction of natural resources. Since then, the narrative of the state-TAs nexus has been conveniently used by the TAs and local people to discount state interventions. The state is regarded as always having a sinister motive in the affairs of the TA and local customary practices.

A review of history also shows that past events helped to frame policy that is relevant to local practices. For example, the making of artefacts from the baobab fibre is deeply rooted in the Gumbu culture - the bags are material culture.[101] The Gumbu derive their name from making the fibre bags which they started in the 15th century. Therefore, any governance intervention that bans harvesting of bark to weave artefacts like fibre bags would destroy the Gumbu's cultural history. In order to protect their cultural history, the Gumbu resisted such moves from the RDC. It is clearly important that any interventions should be sensitive to local level histories. As argued by Dore (2010), any policy that is not sensitive to local conditions is unlikely to succeed.

8.1.7 Socio-economic factors

Both customary and statutory forms of governance can break down due to exogenous forces. Local level customary practices can be weakened by increasing market integration, high population pressures, corruption, and the disempowerment of traditional authorities (Misana *et al*, 1996; Ticktin, 2004; Venter, 2012; Sanchez, 2011). As Chapter 5 explains, confounding factors such as national economic meltdown or government policies like *Murambatsvina* and the absence of rule of law in the country led to a break down and weakening of both statutory and customary practices. *Murambatsvina* resulted in craft traders losing their source of livelihoods after their market stalls were destroyed, some of which had been in existence since 1950s. This led to resentment of the state by the local people (Chibisa & Sigauke, 2008;

[101] Physical objects such as homes, tools and buildings that people use to define their culture, behaviours and perceptions

Kozanayi *et al*., 2014). To the locals, such destruction of markets was synonymous with the ruining of local livelihoods and an attempt to stop a cultural practice that runs deep in the history of the local people.

The poor working conditions of field staff from government also affected the state's ability to enforce statutory rules on the ground. Civil servants, who are supposed to enforce statutory laws and policies have been demoralised for the fifteen years due to poor working conditions and poor remuneration and equipment (Kapingidza, 2014). These results are consistent with findings from other areas. In Cameroon, for example, Cerutti *et al*. (2012) discovered that even with the best of policies in place, if field staff were demoralised then degradation of the environment continued unabated due to lack of implementation and enforcement of the policies. Therefore, the effectiveness of statutory systems depends on the prevailing economic environment. With most governments in the developing world, cutting down on their budgets for the environment (Biti, 2012), it is likely that customary practices will continue to be used to regulate access to natural resources in rural areas.

8.1.8 Geographical scale of interventions

Results from this study lead to considerations that the RDC's raft of legal instruments and policies for regulating baobab use have been ineffective on the ground, and rather, have resulted in the RDC in direct collision with TAs and customary practices that have long been regulating resource use in these communal areas. To make matters worse, the RDC has been grossly underfunded and equipped which has meant it has been unable to effectively discharge of its duties in the governance of natural resources in rural areas. As noted by Bromley and Carnea (1989:25) this paradoxical situation is a case of, "the state taking on far more resource management authority than they can be expected to carry out effectively".

Insights from this study confirm that local rules and practices are more pragmatic and adaptive to local requirements than statutory rules. Elected ward councillors who were members of the ruling traditional families, for example, did not enforce necessary but unpopular rules that would "make people starve". At household and village level, there is a gamut of arrangements that facilitate resource sharing and management. These range from reciprocal and inter-household arrangements, through to the privatisation of trees such as

through the tillage of crop fields. They also include sacredness, use of social capital, tweaking of customary practices to respond to local conditions and the involvement of women in negotiating access in Jinga, ensuring gendered access. It is a bricolage of arrangements (Cleaver, 2012). According to Cleaver and de Koning (2015: 4),

> Institutional bricolage is a process through which people, consciously and non-consciously, assemble or reshape institutional arrangements, drawing on whatever materials and resources are available, regardless of their original purpose. In this process, old arrangements are modified and new ones invented. Institutional components from different origins are continuously reused, reworked, or refashioned to perform new functions. Adapted configurations of rules, practices, norms and relationships are attributed meaning and authority. These refurbished arrangements are the necessary responses to everyday challenges, and are embedded in daily practice.

In designing resource sharing arrangements, local leaders and households are also informed by reactions of the resource harvesters. For example, the ward councillor might not ban bark harvesting for fear of losing elections. Lastly, according to a more contemporary narrative by Cleaver (2012), for institutions to be effective, adapt, and become relevant in changing times, they have to be entwined in everyday social processes. Findings of the study suggest that access to natural resources is a complex and dynamic negotiation process that underpins governance. It is unlikely that state institutions would be effective at this level.

Resource users use multiple access strategies involving networks created at different levels – individual, household, village and across the district. The use of such methods enables resource harvesters to negotiate through different property rights and other impediments such as complex permit systems introduced by the state. Access is about more than property rights or fixed administrative boundaries; it concerns the ability to negotiate and knit networks with others in and outside one's community. Such findings affirm the theory of Ribot and Peluso (2003) which suggests that access is about the ability to benefit from things such as natural resources.

Kooiman *et al.,* (2005) propose a model with orders of governance which envisages negotiation taking place in a defined community across structured orders of governance. However, this study shows that negotiations transcend into neighbouring districts under the jurisdiction of another administrative body, creating complexity in the governance of natural resources. Such linkages and arrangements also take place across scale which possibly increases the robustness of local arrangements. As Scoones (2009) notes, a mixed cocktail of survival tactics is crucial in high risk areas such as the drought-prone areas in which this study occurs. Flexibility allows for an efficient system of resource governance. In theory, this is explained by the principle of subsidiarity. This principle states that when dealing with cross scale environmental problems,

> particular tasks should be decentralized to the lowest level of governance with the capacity to conduct it satisfactorily…… a higher level of organization should refrain from undertaking tasks that could be performed just as well by a grouping closer to the individual (Marshall, 2008:80).

This leads one to suggest that there is no ideal natural resource governance regime; regulators have inherent weaknesses, resource use boundaries shift, roles change, communities are fluid, resource users have agency and local regulators are also affected by the very same harvesters whose behaviour they aim to regulate. This finding is important in the context of commercial NTFP harvesting. Despite the fact that communities in this study, just as other indigenous communities elsewhere, have developed sophisticated traditions and practices to safeguard vulnerable resources (Kaimowitz & Sheil, 2007), increased commercialization suggests the need for more robust governance systems in order to cope with harvest pressures and to meet market standards. There may be, for example, the need to certify produce as sustainably harvested, or to demonstrate phytosanitary requirements. This suggests a merging of both customary and statutory forms of governance and the likely need for both forms of governance, provided some caveats are observed.

8.2 Livelihoods and ecological outcomes of the interplay between customary and statutory forms of governance

8.2.1 NTFPs as a poverty trap?

The preceding discussion has introduced some of the reasons for customary and state involvement in the governance of natural resources, and alluded to some of the outcomes. However, in much of the literature on NTFPs a gap exists regarding the way in which such systems influence livelihoods and ecological systems. In the African context, natural resources are important for supporting local livelihoods through provisioning of food, medicines, spiritual fulfilment, and income (Cavendish, 2000; Campbell & Luckert, 2002, Kepe, 2008). Customary practices and statutory instruments constitute the main forms of governance across much of rural Africa (Wiersum *et al.,* 2014). Considering the interconnectedness between livelihoods and natural resources, any form of governance put in place should provide for the sustainability of both livelihoods and the resources on which the livelihoods depend.

Findings from this study suggest that the notion that NTFPs are a poverty trap is not necessarily true for communities that have a market for their products. It may also not apply to communities that have few economic opportunities and face frequent shocks.[102] Context is thus an essential part of understanding the role of NTFPs in livelihoods. The so-called "poverty trap debate" (Angelsen & Wunder, 2003) and (Belcher & Schreckenberg, 2007) posits that NTFPs are not able to lift harvesters out of poverty largely because of low values and the high costs of marketing the produce (harvesting and transportation to the market). Consequently, harvesters have to harvest more resources to maintain a minimum income level. In this study, baobab trees were located close to the harvesters, as was the market for fruits (15km away from study site) and harvesting fruits and bark fibre required basis instruments which greatly lowered transaction costs.

Because of the favourable market conditions in my study site, NTFPs have transformative functions. Households showed progressions from dependence on natural resources to other non-forest economic activities (e.g. Mrs. A and Mr. H investing in better houses and

[102] Such as crop failures, diseases, loss of jobs due to economic challenges. In the last 20 years Nyanyadzi and Jinga had experienced these shocks often.

diversifying into other enterprises, Mr. F sending his wife to a teacher's college). The notion that NTFPs can be poverty traps tend to miss out of a cocktail of other innovative income generating activities that local people engage in. For example, Mrs. G's involvement in *mukando*-revolving fund as an investment portfolio, Mr. F's involvement in three-point trading. When invested wisely, the income from NTFPs has a transformative effect. Also, with NTFPs like baobab, there are very low production or transaction costs which gives high profits. According to Angelsen *et al*. (2014:23), improvement in income and non-forest activities and poverty eradication removes pressure from the environment". Once harvesters diversify into non-forest dependent economic activities it reduced use pressure on the baobab. The transformative nature of NTFPs is usually not readily acknowledged in the literature yet it is important as it may offer pathways out of poverty into sustainable livelihood options. In this regard, having a functional national economy, markets for natural products and governance framework that is enabling at the local level is of paramount importance.

8.2.2 Raising the profile of baobab

State policies typically underplay the importance of NTFPs, a finding emerging from this study too. In this case, the commodification of baobab products (fibre and fruits) raised the profile of NTFPs which resulted in the state intervening. Examples from elsewhere also show that generally NTFPs are not readily recognised in policies, unless their commercial potential emerges. Cronkleton and Pacheso (2010) noted that policy to support the development of the Brazilian nut in Bolivia came about by coincidence. The state was in the process of putting in place policies to promote small industries and ended up crafting policy to support commercial use of Brazilian nuts. This simplistic narrative has influenced policy makers who view natural resources in ecological and economic terms only. Results from this study proffer a counter narrative that recognises the broad range of benefits that local people, government and other actors derive from NTFPs. Such intrinsic values include those which are spiritual and cultural – often called the "hidden harvest" (Campbell & Luckert, 2002). Policy makers usually ignore these values when designing governance frameworks.

8.2.3 Overregulation and income levels

A key finding is that overregulation negatively impacts the income levels earned by households from natural resources. Both Nyanyadzi and Jinga faced similar conditions with regards to their resource endowments and agro-ecological conditions. The key difference was that in Jinga, the village head did not allow commercial use of baobab products. Consequently, resource harvesters invested in the conservation of the resource base through such subtle means as fencing off baobab trees or hiring witch doctors. Such investments support the view that when locals derive benefits from the resources, they are inclined to manage them and secure the land on which the trees are located. Also, as argued by Matowanyika (1991), Bruce *et al.* (1993) and others, it affirms the critical role of land in the politics of access to natural resources; once people have access to land, they usually also have access to a range of resources found on the land. Given the strong dependence of rural livelihoods on the successful governance of natural resources (Hara *et al.,* 2009), it is clear that excessive restrictions on access to natural resources, can be counter-productive in the sustenance of local livelihoods. In the majority of cases, for a long time, the state's intervention has been unsuccessful. In the late 1980s, Bromley and Carnea, (1989: 24) argued,

> Indeed, a striking feature of the last two decades has been the rise of national government formal authority on the management of local natural resources through central regulatory policies, newer legal frameworks, project financing, and direct administration. However, most analysts agree that this shift in the locus of control has not resulted in effective natural resource management. It has, instead, simply weakened local customary regime.

8.2.4 Holistic solutions to multiple challenges

Findings from this study show that regulating NTFPs needs to be considered in holistic terms because different parts of the tree are used differently. The involvement of the state in the governance of the baobab tree was spurred by ecological concerns, specifically to control bark harvesting, ignoring the social, livelihood and cultural implications of that intervention. The multiplicity of uses and users associated with NTFPs has always posed a challenge when considering using statutory forms of governance to regulate access (Wynberg & van Niekerk

(2015). However, there is potential to use customary practices as there are specific rules and practices regarding access to each part of the tree. This makes the case for the inclusion of customary practices in the governance of multi-purpose NTFPs.

8.2.5 Tenure and productivity

This study reveals that baobab harvesting patterns across tenurial type have an impact on the tree's productivity. Trees in state owned lands were heavily debarked and produced less fruits. Trees around homesteads and in crop fields were less debarked. This evidence suggests that customary practices are still in operation, although in a weakened state. It also supports similar findings in Burkina Faso that showed that baobab trees in state owned land, and managed by statutory instruments, were harvested more than those in communal areas under the management of customary practices (Schumann *et al*., 2010). In a global survey of 271 villages done by CIFOR to assess the impact of tenure on livelihoods and incomes, it was observed that state forests provided much of the forest incomes for people living near forests, largely due to weak enforcement of rules (Jagger *et al.,* 2014). The implication of this is that the state may hold property rights over those lands but local people enjoy usufruct rights as well. To ensure the sustainable utilisation of resources in state forests, consideration could be given to have co-management governance arrangements whereby the state and the local communities jointly manage the resource. Without such an arrangement, people are likely to harvest the resources as poachers and their inclination will be to harvest as much as they can - which will lead to a tragedy of the commons (Hardin, 1968).

8.3 Implications of using customary and statutory forms of natural resources governance

As Ostrom (1990) notes, getting the institutions right is crucial for effective resource management. Ostrom has informed contemporary thinking and environmental policies using her design principles. For institutions to be effective, certain principles have to be followed, including that there should be clear resource use boundaries, and economic returns that out way the costs (Ostrom, 1990). Yet evidence from this study shows that the reality is more complex than this. For example, in regulating resource use, the RDC uses fixed cadastral maps and boundaries (as espoused by Ostrom in her design principles), yet in reality, resource use boundaries do not coincide with administrative ones. In a similar fashion, chiefdoms can

extend into neighbouring districts or countries (Chapter 4) creating management problems. The understanding by traditional leaders is that where traditional boundaries overlap statutory ones, the state land is nested within the traditional land, and by corollary, traditional leaders can exercise some degree of oversight in those areas. Nuesiri (2014) found similar trends in Ghana where traditional authorities have control over land resources in their domain and that of the state. Bruce *et al.* (1993) articulate this using the tenurial niche approach which is a domain to which different people have access to at different times, sometimes with overlapping niches and conflicts.

These findings, guided by Cleavage's bricolage and Giddens' theory of agency and structuration, suggest there is a need to fully understand the behaviour, power dynamics and motives of the actors involved. Such an understanding informs how the two forms of governance can interact in an ordered or hierarchical fashion without causing conflicts. Part of the solution entails institutional brokering which involves establishing new institutions like Ward Environmental Management Committees (WEMECs), but these, just like their principal, the RDC, need to be embedded within existing institutions. Part of the institutional negotiation may also entail resolving conflicts between TAs (for example in Nyanyadzi) which if unresolved, can lead to resource degradation (Chapter 7). Usually, the contestation of power in communal areas is perceived in dichotomous terms between the state and the traditional authorities (Mukamuri *et al.*, 1998; Murombedzi, 1999; Hughes, 2001). Results from this study, however, show that there are internal conflicts within TAs which may need to be understood and taken into account during policy formulation.

Integrated approaches to natural forest management have been noted to remain elusive across the tropics (Guarigauta *et al*., 2010; Wynberg *et al.,* 2014). Reasons vary, but it is likely that both statutory and customary approaches have inherent weaknesses that compromise their timely reaction to changes in the local context. The roots of these inefficiencies and conflicts are located in the failure by the state to interweave "new" statutory forms of governance with already existing customary systems. The baobab case reveals a heavy handedness by the state – for example, by putting a moratorium on baobab product use, heavy fines and penalties and a bureaucratic permit system, that dissuades resource users from complying with such rules. Despite these rules, harvesters have continued to access

resources using local level arrangements and in some cases, through corrupt means such as paying expedite fees to the TAs or "talking". Such patterns are likely to be repeated elsewhere. Tieguhong, *et al.* (2015) for example, working in Cameroon, found that the bureaucracy involved in the issuance of multiple permits for okok (*Gnetum spp*), and weak enforcement statutory rules, led to rampant corruption and negative environmental impacts due to illegal use and over exploitation. In this case, corrupt officers secured than 81% of the potential revenue earmarked for the state.

Findings from this study reveal that in the process of crafting bylaws, the state allocated itself all the fiscal powers. This affected the morale and ability of traditional authorities to enforce the bylaws. Where the state intervened with heavy handedness, it stifled customary practices and created an institutional vacuum and paralysis. This resulted in the depletion of resources and undermining of local practices. Attempts to introduce a cumbersome permit system in Nyanyadzi resulted in heavy debarking of trees. Earlier attempts by the state to replace TAs with elected leaders soon after independence produced similar results (Chapter 4). This resulted in what Lee (1993: 12), called a "socially constructed stalemate"- a situation in which the state is unwilling to surrender its prescriptive policy approaches while lacking resources to make them effective. This stalemate was aggravated by the state's lack of resources to monitor and enforce environmental laws and policies at the local level.

As Dietz *et al.* (2003: 1907) remark, "Successful commons governance requires that rules evolve". That evolution is happening through the interaction between customary practices and statutory forms of governance at district and above levels. Shifting and waning of resource-use boundaries (Mandondo, 1997) to accommodate the demand for products is part of that evolution. That fluidity of boundaries does not equate to porosity, as clear guidelines exist on how resources can be accessed, all the time.

Evidence presented challenges the simplistic view that the state always overrides traditional authorities (Baldwin, 2015). To explain this evolution, Giddens' (1984) structuration theory and Cleaver's (2012) *bricolage* scholarship offer plausible frameworks. Both recognise a constant interaction between the different forms of governance as well as between resource users and policy enforcers. As these interact, they learn from each other and create and recreate themselves and others, in the process form adaptive resource governance that

provide ecological,[103] economic and social outcomes that are desired by the actors involved. As de Koning (2014) notes, alteration takes place as each actor changes practice to suit the local context, and in some cases, both forms of governance can come together in a form of aggregation. This gives scope for integrating both the customary and statutory forms of governance.

Bylaws and statutory rules on the other hand, focus on clarity of duties and responsibilities. However, their effectiveness is largely a function of the level of enforcement. According to Cleaver (2012: 1), "institutions have clear roles, rules and lines of accountability do not necessarily lead to better governance". To be effective, institutions need to be supported by the state or traditional authority, and to be embedded within local level practices. As proposed by de Koning (2014), actors have to be flexible and willing to compromise their positions. State actors, because they operate within the framework of hard rules such as stringent budgetary requirements, have little leeway to manoeuvre. That lack of flexibility makes the state less adaptive to changes - and thus more prone to govern weakly.

By way of an example, when the Zimbabwean currency lost value due to hyperinflation in the late 2000s, and stipulated level of fines were now valueless, the Zimbabwe government did not revise the rates until 2010. By 2004, in response to hyperinflation, the Nyanyadzi community had already crafted bylaws that updated the fines to US$ or equivalency in kind.[104] For the state, the new fines had to be gazetted by a special pronouncement by the head of state via the Attorney General's office. Meanwhile there was a mismatch between fines paid and the gravity of offence committed. The informality of customary practices and the fact that the TAs as regulatory authorities are in constant interaction with resource users enables immediate and constant problem identification, crafting of solutions in the form of institutional bricolage (Cleaver, 2012).

New resource sharing arrangements are crafted and recrafted on an ongoing basis. This happens in unpredictable but relevant ways to deal with the situation. Such unexpected arrangements need to be accommodated in any forms of governance. The issue of women

[103] In broad governance terms, this is figuratively depicted as steering the ship towards a desired destination (Sowman & Wynberg, 2014).
[104] See also Tete (2005), for a detailed account of the process.

consulting a witch doctor to safeguard baobab trees around their homesteads from harvesters is one example. While witches are deterred in society, the hiring of one is an example of how unpredictable some of the institutional outcomes can be. Some of the solutions are pragmatic, for example promotion of use of synthetic fibres to colour artefacts as opposed to using organic dye from bark, roots and pods of trees which was threatening to harm the source trees. As argued by Gunderson and Holling (2001), institutional outcomes, just like ecological outcomes, do not assume a perfect fit, but are complex, dynamic and at worst unpredictable. In drafting forms of these it is important to anticipate and leave room to accommodate, rather than stifle these unexpected outcomes and arrangements.

Two key findings emerge from the above discussion. The first is that to ensure compliance to statutory practice by resource harvesters, the state needs to be embedded within the local context (Granovetter, 1989) through physical presence in the area to ensure effective monitoring mechanisms in place. This is something Ostrom (1990) proposed under her design principles. The second is that though local people may not have power to sue the state, they have local ways of fighting injustice in the governance of natural resources. Disengagement, previously regarded by Scott (1985) as a weapon of the weak, is in contrast a form of institutional bricolage adopted by local people to get a desired outcome.

8.4 Conclusion

This chapter summarised the key findings from Chapter 4 to 7. The findings were organised into themes and interpreted through the lenses of theories and debates engaged with in Chapter 2. Figure 10 provides a conceptual framework used to interpret findings of this study. The figure is therefore a summation of this chapter, highlighting how customary and statutory forms of governance interact and, and in the process, influence ecological, livelihoods and social outcomes. It also presents the context in which the interplay between the two forms of governance occurs. Because resource users have agency (Giddens, 1984), there are feedback loops to the very institutions that aim to regulate behaviour at the local level.

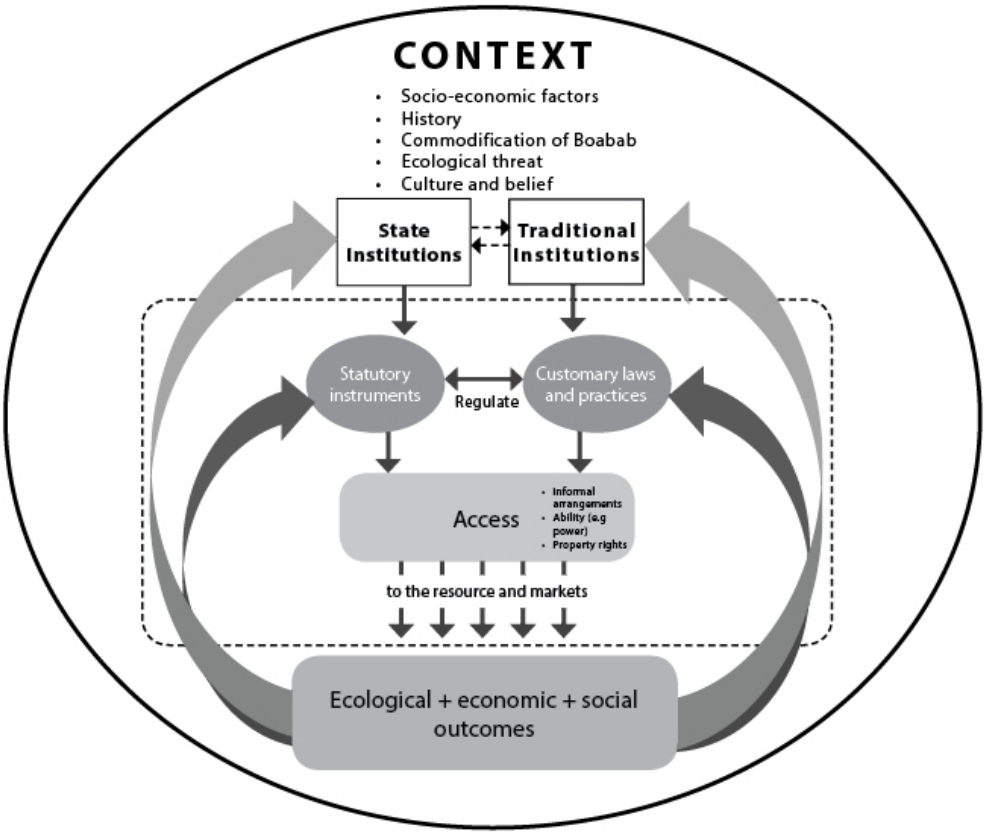


Fig. 10: Summary of points influencing governance

Forms of governance that ensure sustainable livelihoods and ecological sustainability require both customary and statutory forms of governance. For domestic use, customary practices are usually strong enough to regulate access. When products are commercialised, the state may intervene, albeit in a graduated manner in order not to override local customary practices. Customary practices on the other hand, are likely to be important for both domestic and commercial use. Baobab, like most NTFPs, has multiple uses and some of the non-commercial products such as the leaves may still be usual for domestic purposes. As aptly concluded by Buchmann *et al*. (2010: 165), drawing on their work on baobab use in West Africa, "It is of utmost importance that current baobab use in subsistence is not undermined by commercialization and that access to wild baobab populations remain guaranteed for local communities".

Governance is complex and context specific. Jinga and Nyanyadzi differ significantly in terms of the ecological and livelihood outcomes of governance approaches yet are only 20km apart. The implication is that the use of a one size fits all approach does not help to address governance problems. Solutions have to be area specific. To craft such solutions requires consultation with all concerned actors and an understanding of local level resource sharing arrangements. As TAs re-emerge, there is need to locate them in unfolding governance processes in order to ensure the sustenance of customary practices.

The *bricolage* scholarship is still a new concept and has the potential to be used as a theoretical framework to understand the day to day interactions among actors and the designing and redesigning of solutions to the environmental challenges encountered by actors such as harvesters and regulators. This study contributes to this emerging scholarship by using empirical evidence to test it within the context of governance of natural resource. The next chapter summarises key lessons and conclusions from the study.

9 CONCLUSION

Baobab trees in Zimbabwe have been used since time immemorial but since 2000 use of the fruits and bark has increased in response to the emergence of a market for these products. Although customary forms of governance continue to be used to regulate access to baobab, intensified commercialization has led to an increased use of statutory governance approaches. This in turn has influenced the way in which traditional authorities have managed the resource.

Using the lens of baobab commercialization, the research set out to elucidate understanding of the interplay between customary and statutory governance in managing natural resources, the influence of such interactions on ecological sustainability and livelihoods, and the contextual factors that shape such systems.

Specific objectives supporting the research aim were:

i. To identify the range of baobab products that are harvested and their contribution to livelihoods;
ii. To determine linkages between different governance systems and the sustainable use of baobab, with a focus on different tenure regimes;
iii. To elucidate historical and contemporary forms of statutory and customary governance regulating baobab use; and
iv. To propose a framework to understand how customary and statutory forms of governance influence ecological sustainability and livelihoods.

To get a deeper understanding of the issues, a case study approach was adopted. Detailed site-specific case studies have been found to provide greater insights into the governance of commercialised natural products. Two study sites were selected on the basis of similarities in resource endowment and contrasting use patterns and forms of governance. Qualitative and quantitative methods were used to gather the data, with the intention to provide rigour to the results through triangulation of different approaches, and depth through qualitative ethnographic query. The history of both customary and statutory forms of governance was reviewed from the pre-colonial up to the present-day era. Additional methods included

household interviews, ecological and market surveys, focus groups, institutional mapping, ranking and scoring, oral histories with key informants, participant observation and a review of grey literature including articles at the provincial museum and National Archive in Harare and newspaper articles.

9.1 The benefits of baobab and its contribution to local livelihoods

Harvesters of baobab products pursue a cocktail of innovative livelihood options. Such options include trading of baobab crafts, agricultural activities, group savings and lending schemes. These interlinked livelihood options reinforce each other and increase the robustness of local livelihoods, also providing for the integration of the baobab economy in local economic activities. Overall, the contribution of income from baobab products provides substantial support to households.

There are also wider benefits derived from baobab and other non-timber forest products (NTFPs), used commercially in the context of economic decline. These have been typically overlooked in the literature. This study revealed that economic hardships such as loss of employment, hyperinflation and droughts led to more people, including the middle class, getting involved in harvesting, using and trading baobab products. This result confirms the contribution of NTFP income to local livelihoods, especially in times of shock such as drought or economic recession, and demonstrates that NTFPs such as baobab go way beyond being a safety net for the poor. Marketing of baobab products, albeit through a complex permit system, has unlocked the economic potential of the tree for many people, including cross border traders, craftspeople, and traders of semi processed products. The income from baobab has had a transformative effect on local livelihoods; improved wealth has led to more harvesting and trading of baobab products and subsequent diversification to other formal activities such as education, small businesses, and investment in assets such as houses and cattle. A key conclusion is that the utilisation of baobab products has the potential to stimulate local and national economies in producer communities.

Relative to other NTFPs such as Brazil nuts, hoodia and devil's claw, baobab products are not high value, but the baobab tree provides many benefits to local people. These include both consumptive and intrinsic values, such as spiritual fulfilment. The results from this study

affirm the intrinsic benefits of baobabs; such values are typically overlooked in the discourse of natural resource governance, largely because valuation has focused typically on the trade of products and tangible economic returns.

The wider implications suggest that resource valuation should also consider non-monetary uses in order to give a comprehensive value of resources. This is important in informing policy interventions, which at the moment, appear to be principally driven by economic values ignoring other non-monetary values which may lie dear to the lives of local people. It is impossible to talk about the governance of natural resources without talking about the livelihoods of local people. Common property theory places incentives at the centre of any successful resource management.

9.2 Determining the linkages between different forms of governance and the sustainable use of baobab, with a focus on different tenure regimes

The study illustrates that state interventions to manage baobab in the study area have been driven largely by ecological concerns, alongside interests to strengthen local livelihoods and revenue collection. This is despite the fact that studies on bark harvesting and black soot disease - the ecological reasons given by the state to justify its interventions - are inconclusive. In contrast, the interest of traditional authorities in regulating baobab use and access has been informed by reasons relating to sustainable livelihoods, ecological sustainability and the need to maintain a delicate spiritual link between the environment, the spirits of the land and resource users. Some of the customary practices used by traditional authorities appear counter-intuitive, such as allowing errant behaviour in order to invoke punishment from the spirits of the land. Such approaches are at the centre of local people's cognitive understanding of the environment-spirit nexus.

Excessive control of access by the state, that compromised local livelihoods, resulted in unintended consequences such as harvesters not complying with regulations and illegal harvesting of baobabs especially in state lands. Further, this resulted in trade going under the radar which resulted in corruption involving traditional authorities and officials at the national borders. The lack of regulatory compliance to state laws or customary practices by local harvesters conforms with Giddens's (1984) assertion that people have agency and are able to

act on and influence their situation, especially when their livelihoods are threatened (Granovetter, 1989).

In state-owned areas, tenure is insignificant in regulating access to natural resources as *de facto* local rules are used to access baobabs. At best, there was weak enforcement of statutory systems and traditional boundaries did not coincide with administrative boundaries. The wider implication is that when boundaries do not coincide as is usually the case due to the history of colonialism and internal migration of local tribes, local people use traditional boundaries to access resources. This results in local people encroaching onto state lands for purposes of harvesting baobab. For privately owned areas, there is a gamut of resource sharing arrangements put in place that are more nuanced than those found at community level. When traditional leaders tightened access rules in the communal areas, harvesters ended up harvesting trees in state lands.

The study concludes that based on the identified parameters of ecological sustainability, namely the ability to produce fibre, fruiting ability and the level of infestation by black soot, customary systems are stronger in Jinga than in Nyanyadzi. The weakening of customary practices in Nyanyadzi could be due not only to resource use pressure but also to socio-political factors emanating from years of leadership contestation. Statutory systems are not robust enough to deal with the complex situation at the local level, and suffer from weak enforcement. Results unequivocally illustrate that trees in state-owned land are debarked the most. The trees also produce less fruit, presumably due to excessive stress from debarking, since there is a clear negative relationship between debarking and fruit production. That the baobabs are excessively debarked can be explained by the fact that the state does not enforce its regulations. Reasons for weak enforcement are largely related to poor resource availability on the part of the state and resistance from a populace that is rebelling against a plethora of unpopular state policies.

Results reveal that the outbreak of black soot disease does not necessarily arise from excessive bark harvesting. Even trees that were not debarked in Jinga had the same level of infestation as those that were debarked in Nyanyadzi. Overall, the baobab tree appears to be fairly resilient to bark harvesting regimes and has a seemingly inherent healing mechanism.

However, excessive bark harvesting beyond the level of the first branch has been found to negatively impact fruiting.

9.3 Elucidating historical and contemporary forms of statutory and customary governance regulating baobab use

What, then, are the prospects of using customary and statutory forms of governance to regulate the use of natural products such as baobab trees in communal areas? Both customary and statutory forms of governance have inherent weaknesses and strengths, and it is important to ensure that there is good compatibility between different approaches and that interventions are appropriate. The historical and present interplays between customary and statutory forms of governance paint a picture of recurrent episodes of conquest, collaboration, subjugation and conflicts between the two forms of governance, this being a reflection of broader overarching socio-political processes. Such interactions include phases of collaboration and conflict which render access to the various baobab products a continuous negotiated process. In some cases, this has resulted in intended and unintended socio-economic and ecological outcomes.

A key finding is that history informs the way local people harvest and use resources. A typical example was the weaving of fibre crafts by the Gumbu people which dates back to the eighteenth century and is part of the social identity of these people. With regards to the governance of natural resources, the influence of history in shaping current practices is profound due to the long trajectory of the interplay between customary and statutory forms of governance that spans back to the colonial era. Therefore, efforts to understand current forms of governance in the African context without situating them in the historical context will overlook the nuances of history that are recast by local people in the present-day governance discourse. This is amplified by the fact that historical narratives around kinship ties have been used to assert or claim access rights to natural resources in many areas.

The use of both customary and statutory forms of governance was also affected by exogenous factors, such as the socio-economic context. Such factors exert pressure on the resource base that strain and potentially warp local customary practices, requiring their realignment and reinforcement. Realignment might be in the form of creating new institutions. In the case of customary practices, the reinforcement could come from the state, but if excessive, may

cause unintended consequences. Related to this point is the observation that statutory interventions should not be rushed, as they distort a rich set of nuanced local arrangements that are well embedded in the local setting as part of the social fabric.

The time taken for customary and statutory forms of governance to adjust when there are changes to the local contexts differs, with customary practices being more dynamic and responsive than statutory approach. The lag in response by forms of governance may result in resource degradation.

Overall, this study demonstrates that, largely due to political interventions, use pressure and conflict, institutions undergo alternate phases of effectiveness and ineffectiveness. The adaptation time across systems is however different. Customary forms of governance tend to adapt more quickly to changes in the local context than statutory forms of governance. Although customary practices may be weakened by improper and excessive intervention by the state, findings from this study suggest that traditional authorities remain resilient. Indeed, findings challenge the notion that traditional authorities are powerless victims of a central state which have had their customary power eroded due to recurrent phases of disempowerment from the colonial to post-colonial periods. In contrast, traditional authorities are re-emerging stronger from this long history of interaction with the state.

However, contemporary traditional authorities also exhibit inherent weaknesses. These include contestation of power among members of the ruling clan or lack of business acumen. It was typically believed that local players, notably traditional authorities, have the capacity to manage the resources on their own, drawing on their deep-rooted knowledge of the resource base. But neither the state nor traditional authorities on their own have the capacity to copy with the pressures and complexities arising from commercial harvesting of communally owned baobab products. Customary efforts at regulating use need to be complemented by the state. Strengthening customary practices and rules instead of overriding them with statutory forms of governance, offers a better opportunity for sustainability. This suggests the need for a governance approach that implements both customary and statutory systems in delicate measure to avoid one overshadowing the other. Melding these two systems entails changing some operational issues and mind sets. Recognition by the state needs to go beyond the formalisation of customary practices through

statutory laws. Timing as well as the degree of intervention is crucial for successful implementation of a policy framework that uses both customary and statutory forms of resource governance.

A key conclusion is that where statutory forms of governance are used, they should recognise and infuse customary practices in order to reflect local context. Whilst most literature portrays the relationship between the state and traditional authorities in dichotomous terms - that is a subjugating state and the subservient traditional authority, the relationship is substantially more complex.

9.4 To propose a framework to understand how customary and statutory forms of governance influence ecological sustainability and livelihoods.

This study contributes to the understanding of NTFP governance, going beyond a description of statutory and customary forms of governance, also explaining the ecological and livelihood outcomes of using both. A historical perspective has helped to enrich understanding of the interplay between the two forms of governance.

This analysis was carried out within the context of a broader discourse on the African continent that is embracing traditional authorities as an emergent form of governance without fully understanding the relationship between traditional authorities and statutory forms of governance and outcomes in the governance of natural resources (Nuesiri, 2014). In this regard, customary practices need to be integrated into the broader governance agenda for natural resources in order to improve resource ecology and local livelihoods. While current conceptual frameworks used to understand governance such as Kooiman *et al.* (2005) provide valuable insights into the study of governance, especially when exploring interactions between the local, national and international levels, they are silent on local level dynamics. However, decisions and practices that ultimately affect livelihoods and ecological systems take place at the local level. Existing conceptual frameworks are typically based on European contexts which do not clearly capture local African contexts. African contexts are unique and complex due to the history of heavy dependence on natural resources by local people as well as conflicts between customary and statutory forms of governance. Most governance frameworks are based on Western contexts and may not address some of the unique local contexts in developing countries where communities heavily depend natural resources. To

augment such Eurocentric models of governance, there is need to consider theories that encapsulate access as ability not a right, celebrate resource users as having agency and embrace the multiplicity of local customary practices under the rubric of *bricolage* as a plausible governance option.

Such local arrangements exhibit elements of pragmatism, sustenance of local livelihoods and ecological sustainability; these arrangements are not readily embraced in the formal policy domain that usually uses a one size first ball approach to natural resource governance. The proximity of spirits in the human-environment nexus in particular offers a nuanced narrative to the way local people relate with the environment. Normally, this relationship is viewed in simplistic ways whereby local people 'mine' the environment for survival but this study has shown that there is a spiritual link between the people and the environment that is immediate and shapes the way that residents perceive, use and frame resource use strategies. This suggests the need to avoid oversimplifying local complex realities and nuances that make local practices resilient and relevant. Governance models that are sensitive to local arrangements are needed. A preferred scenario is having a mosaic of site-specific arrangements that are sensitive to local contexts, informed by other frameworks used elsewhere.

Customary practices have always been used by local people in the governance of natural resources in communal areas. They are robust, dynamic and are entrenched in the day to day lives of the resource users, making them an appropriate form of governance at that level. There is a need to embrace the different forms of resource sharing arrangements that evolve and operate at the local level. These arrangements may not fit into exiting technical toolkits or environmental blue prints where policy from the top may not be communicating with reality on the ground. In turn the diligent documentation of customary practices can help to inform existing and future statutory forms of governance. In sum, the results from this study provide a narrative that emphasises the importance of considering seemingly peripheral forms of governance such as customary practices within the continuum of resource governance in rural areas.

In reality, resource sharing is a *bricolage.* An understanding of the context in which the *bricolage* is taking place is important. Context gives meaning to current behaviours. Key

factors to consider as part of the contextual analysis include history, the value of natural resources, socio-economic factors, and local cultural and belief systems.

Given the complexities provided by the Zimbabwean socio-economic and political situation at the time of the study, a key question that arises is, “Would the current management practices yield the same outcomes in a stable country”? Further work needs to be done in less volatile countries where traditional authorities and statutory practices operate side by side with each other. Although these results might be context specific, there is scope for applying the lessons learned from this study to other developing countries. An understanding of the interface between statutory and customary approaches that govern natural resources in the developing world is important as it helps to inform the crafting of polices that ensure equity in resource use, the sustenance of livelihoods and ecological sustainability.

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ANNEXES

Annex 1: List of informants

Name of institution	No. interviewed	Issues discussed
Chimanimani Rural District Council	3 (chief executive officer, natural resources and project officers)	Overview of RDC operations
Environmental Management Agency	2 (1 District, 1 Head Office)	Environmental policy Enforcement of statutory rules Black soot disease
Forestry Commission	4 (Head Office, Province and District)	
Agricultural Extension and Technical Services (Agritex)	4 (field officers)	Livelihood systems in the study site Conservation initiatives in the area
Zimbabwe Republic Police	2 (Nyanyadzi Member in Charge and PISI detail)	Police clearance and feedback reports
Reserve Bank of Zimbabwe	1	Levies imposed on export crafts
Ministry of Education and Culture	1	Crafters participation in provincial and national art galleries Local cultural values and practices
Mutare Museum	2	Grey literature on baobab black soot disease
Media	1 (environmental reporter)	Coverage of the baobab issues in the study site
NGOs-SAFIRE and EAfrica,	5 (Project staff)	Baobab management, by law formulation and support to budding pulp traders in Nyanyadzi
Private buyers of baobab fruits	3	Governance of the marketing aspect of the baobab products Prices of products

Phytotrade Africa	1	Governance of the baobab pulp and oil value chain
Bulk traders of crafts	6 (4 local and 2 in Harare)	Livelihoods issues
Traditional leaders	24 (21village heads and aides and 3 headmen)	Customary systems
Ward councillors	3	Statutory systems
Ward and Environmental Management Committees	2	
Environmental Researchers at the University of Zimbabwe	3	Historical information about the study site
Value addition actors	2	Livelihoods issues
Fibre harvesters	5	Institutional arrangements
User group leaders e.g. fruit collectors	7	Group organization, access and livelihood
Cross border traders	5	Governance of the export market
Fruit and crafts traders	5	Income levels, access, revolving funds
Former offenders	2	Fairness of the customary and statutory systems

Annex 2: List of focus groups conducted

Date	Place	Typology of group	Number of participants
18/12/10	Nyanyadzi	Ward councilors and traditional leaders-setting up meetings with	7
3/1/11	Chimanimani	EMA, FC, RDC	3
	Dirikwe	Traditional leaders	12
	Gudyanga	Traditional Leaders	13
31/12/10	Nyanyadzi Agritex Offices	Traditional leaders including Headman Matiashe, Chief Muusha and ward councillor	11
8/1/11	Jinga	Village head, ward councilor Ordinary residents	32
9/1/11	Nyanyadzi primary School	Village heads Ministry of Education and Culture Nyanyadzi School Development Association Chairperson ZRP-Public Relations	18
23/5/11	Chimanimani council	RDC officials-Research permit	3
4/2/12	Gudyanga	Fruit and fibre harvesters	11
26/8/11	Gudyanga village	Cross border craft traders Bark harvesters Craft weavers	12 - 5 women and 7 men
3/2/12	Jinga	Residents	19
	Chimanimani	RDC Natural Resources and Project Officers, EMA and FC	4
27/8/12	Harare	Reserve Bank official	1

Annex: 3. Explanation of codes for ecological survey

Indicator	Scale	Justification
Index of health	1. Good - no black soot diseases 2. Poor - early signs of black soot 3. Very poor - all tree has black soot disease	Black soot is an indication of excessive stress partly attributable to extensive debarking Diseased trees do not produce usable fibre and eventually such trees may die
Ability to provide fibre	1. Good -provides good quality, first cut - *mutanguro* 2. Poor - second cut fibre - *mupindwa* 3. Tree cannot be used for fibre e.g. diseased, hollow or rugged surface.	Bark fibre is an important product used in craft production. therefore its availability ensures the sustenance of the craft industry Heavily debarked trees produce second cut fibre which makes inferior crafts
Impact of harvesting on stem and branches	1. Nil – not debarked at all 2. Mild - not debarked all round 3. Severe-debarked all around 4. Very severe-debarked more than one rung	Debarked portions require 2 years healing time Severely debarked trees can potentially succumb to black soot disease. Intensity of debarking is an indication of serious break down of local institutions.
Tenure	1. Privately owned - at and around homesteads 2. Sacred sites - sites for grave yards, rituals and worshiping 3. Communally owned -crop fields, grazing areas, mountains, forests 4. State -along main road, college, Zimbabwe Republic Police Camp	Tenure defines access, Sacred sites are worth studying on account of the centrality of sacredness in the belief systems and natural resource management systems of the people in the study areas. Additionally, this tenure system merits investigation on account of the fact that it can be proxy for the integrity of customary systems.

Annex 4: Ecological survey tool

*Witness Kozanayi: University of Cape Town PhD studies***.**

Questionnaire for the ecological survey on the baobab tree in Chimanimani District, Zimbabwe:

Data collected by: _____
Date: _____ Sheet No: _____

Name of Village	Tree No.	GPS Point	Tenure system	Tree size		Frequency of harvesting	Depth of cut (cm)	Impact of harvesting		Response		
		E S		Height	Width			Stem	Branches	Ability to provide fibre	Health index	No. of fruits
		E S										
		E S										
		E S										
		E S										
		E S										
		E S										

Annex 5: Road side market survey

Name	Age	Sex	Village	Level of education	Years selling crafts

Annex 6: Wealth classes for Nyanyadzi village cluster

Wealth class	Description
1 - Richest	Have irrigated crop fields and fields along the Odzi river Formal employment in the NGO sector or children with well-paying jobs including in the diaspora Have more than 15 cattle and 20 goats Own radio and TV Have electricity at home Might own a car
2	Might have irrigated crop fields and fields along Odzi river but poor planning is a hindrance to potential productivity Civil servants and working in diamond fields Less than 15 cattle, less than 20 goats Have radio and TV Have solar panels
3	Less than 5 cattle Temporary employment Few goats (less than 10), no cattle Have got radio and TV
4 - Poorest	Unemployed, survive on *maricho* - hired labour No cattle, nor goats Might have a radio but no TV

Source: Group discussion with informants from Dirikwe, Gudyanga, Nechigonda, Makotamo and Masasi villages

Annex: 7 Research Permit from RDC

CHIMANIMANI RURAL DISTRICT COUNCIL

TELEPHONE 2272/3
FAX 2403
All correspondences to be addressed to the Chief Executive Officer
Stand 263
P.O. Box 65
Email: chimardc@imweb.co.zw
Chimanimani

23 May 2011

TO WHOM IT MAY CONCERN

This note serves to confirm that Mr. witness Kozanayi I.D No: 44-041457-Y-44 is a PhD student in the Department of Environment and Geographical Science at the University of Cape Town, South Africa, and is carrying out a Research on Governance of Baobab in Chimanimani district ,Zimbabwe

The period of research is from 2011-2013.The research will be conducted in wards 3-Chakohwa, ward 8- Nyanyadzi and ward 20-Tonhorai.

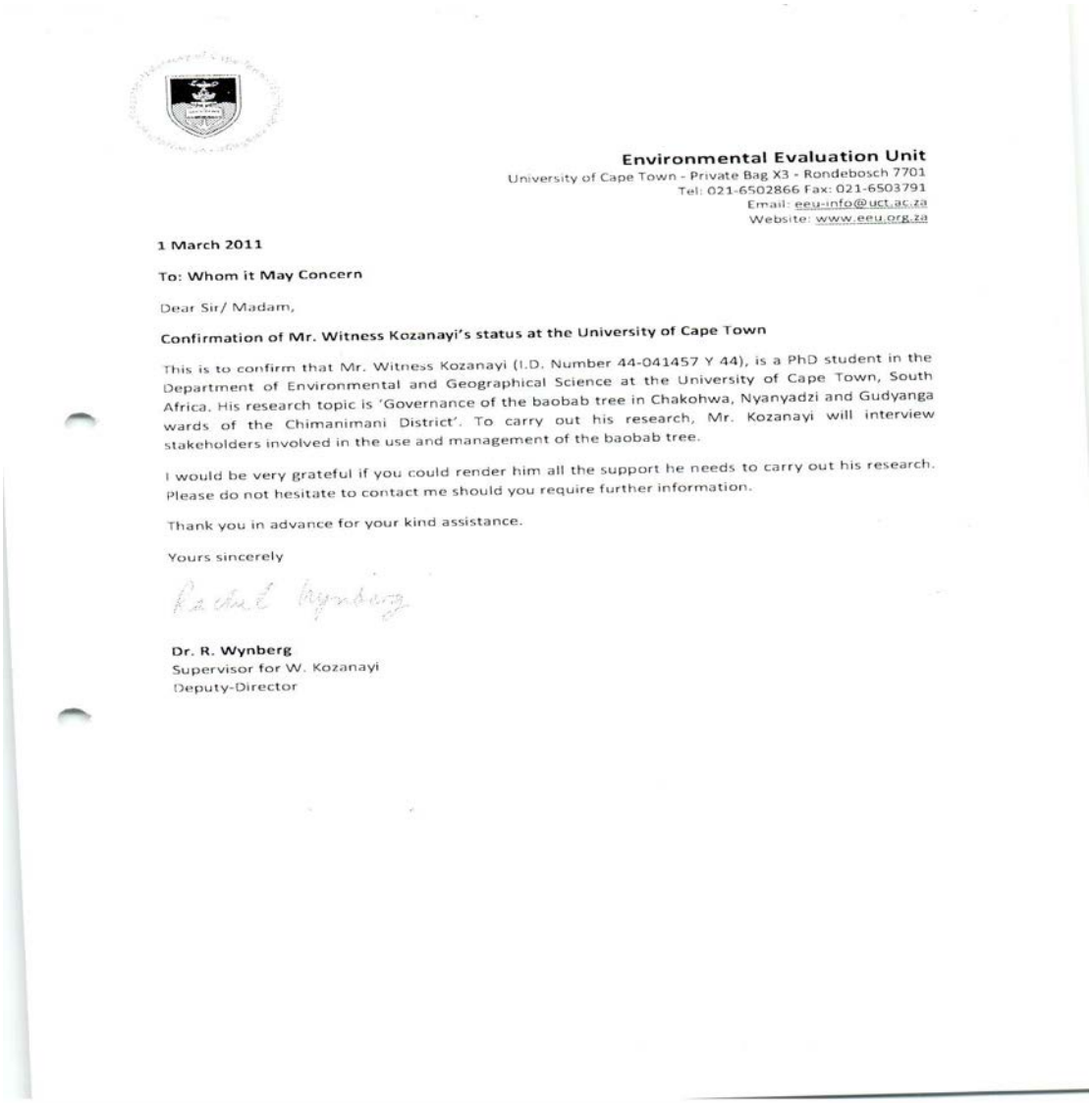
Chimanimani Rural District Council do hereby authorize Mr. Witness Kozanayi to carry out the research based on his M.O.U with council.

We look forward to the success of the research as council will benefit in furnished results.

Chimanimani Rural District Council
23 MAY 2011
P.O. BOX 65, CHIMANIMANI
TELEPHONE 2272/3 : 29147/8

CHINAMIRA B
FOR; Chief Executive officer
CHIMANIMANI RURARAL DISTRICT COUNCIL

Annex 8: Support letter from UCT



Environmental Evaluation Unit
University of Cape Town - Private Bag X3 - Rondebosch 7701
Tel: 021-6502866 Fax: 021-6503791
Email: eeu-info@uct.ac.za
Website: www.eeu.org.za

1 March 2011

To: Whom it May Concern

Dear Sir/ Madam,

Confirmation of Mr. Witness Kozanayi's status at the University of Cape Town

This is to confirm that Mr. Witness Kozanayi (I.D. Number 44-041457 Y 44), is a PhD student in the Department of Environmental and Geographical Science at the University of Cape Town, South Africa. His research topic is 'Governance of the baobab tree in Chakohwa, Nyanyadzi and Gudyanga wards of the Chimanimani District'. To carry out his research, Mr. Kozanayi will interview stakeholders involved in the use and management of the baobab tree.

I would be very grateful if you could render him all the support he needs to carry out his research. Please do not hesitate to contact me should you require further information.

Thank you in advance for your kind assistance.

Yours sincerely

Rachel Wynberg

Dr. R. Wynberg
Supervisor for W. Kozanayi
Deputy-Director

Annex 9: Household questionnaire

Introduction

This survey is being conducted by Witness Kozanayi who is a PhD student at the University of Cape Town as part of his studies. The research project is looking at the governance of baobab tree products with a special emphasis on the interface between customary and statutory regulatory systems. The results of the survey will be used for academic purposes only and no information gathered will be used to harm the informant. Information given will be treated in the strictest way possible. Names of respondents and their responses will not be divulged to anyone or presented in the final report. You can ask for clarification on any question at any time during the interview.

Identification	
1. Household name	
2. Sex of the household head (1. Male 2. Female)	
3. Village	
4. Ward (1. Chakohwa 2. Gudyanga 3. Nyanyadzi	
5. Name of Interviewer	
6. Date of Interview	
7. Questionnaire checked by	
8. Any remarks	

Household characteristics:

1. Name of respondent:_____

2. Sex of respondent

1 Male

2 Female

3. Age of respondent (years):

1 under 19

2. 19-30

3. 31-45

4. 46-60

5. Above 60

4. Marital status of the respondent:

1. Single

2. Married

3. Divorced

4. Widow

5. Separated

5. How many people are in this household?

Children[1]		Adults	

[1] Anyone below 12 years –who is unable to meaningfully contribute to household economy especially when it involves baobab activities.

6. How long has your household been living in this area (years)?

1. Less than 5 years ago
2. 6-10 years
3. 11-20
4. 21-30
5. Over 30 years

7. What is the highest level of education of respondent?

1. No formal Education
2. Grade 7
3. Incomplete “O” level
4. “O” Level- Form 4
5. “A” Level-Form 6
6. Technical Diploma
7. University Degree

7. What tribe are you?

1. Ndau
2. Zezuru
3. Karanga
4. Ndebele
5. Other, specify …….

8. Where did you come from before you settled here?

1. Former commercial farms
2. Urban centers
3. Other rural areas in the district
4. Other rural areas in other districts
5. Mining area
6. Have always been living here

9. Other areas (state which): _____

10. Why did you come to settle here?

1. Security/Safety
2. Agriculture prospects
3. Job prospects
4. Health reasons
5. To harvest baobab and other natural resources
6. Diamond mining
7. Family or relative was here
8. Resettlement program
9. Other (Describe): _____

Economic status:

11. Are you in paid employment?

1 Yes, always
2 Yes, sometimes
3 Occasionally/rarely
4 No, never

12. Are any household members in paid employment?

1 Yes, always
2 Yes, sometimes
3 Occasionally/rarely
4 No, never

13. Does your household own: (1. Yes, 2 No)

Car
Bicycle
Scotchcart
Radio
Hammers
Axes

14. How many of the following animals does your household own (Table 1?

1. None (0)
2. Less than 5
3. 5-10
4. 10-15

Table 1

Animal	*Response*
Cattle	
Goats	
Sheep	

15. Does your household have a plot in the irrigation scheme (*mumaeka*)?

1. Yes
2. No

16. OBSERVE (What is the state of the main house of the homestead?)

1. Pole and dagga and thatch

2. Pole and dagga and modern roofing material

3. Brick and thatch

4. Brick and modern roofing material

5. Other (describe): _____

17. Does anyone in this household have links to anyone in leadership position? (1=Yes; 2=No)

1. Traditional leaders
2. Ward councillor
3. WEMECs
4. Political leaders
5. Other, specify_____

18. Do you belong to a craft seller's group? (1 Yes, 2 No)

19. If yes, what are the advantages of belonging to such a group?

1._____

2._____

3._____

4._____

20. Please rank these sources of income in order of importance to your household in a typical year (1. Most important, 2. Next important, N/A not applicable)

1. Sale of baobab fruit
2. Sale of baobab mats/hats/bags
3. Sale of livestock
4. Sale of dryland crops
5. Sale of crops from irrigation scheme
6. Hiring out labour *(marikicho*)
7. Work at the diamond mines _____
8. Work at the Green Fuels estate _____
9. Remittances _____
10. Illegal diamond mining (*Mutsvare*) _____
11. Cross border trading _____
12. Other, _____

21. In a typical year, what is the range of your household annual income –from all household members?

1. Less than $500
2. $500-$2000
3. $2001-$5 000
4. $5001-$10000
5. Above $10 000

Harvesting dynamics:

22. Does anyone in this household harvest baobab products mentioned in table 2?

1=Yes; 2=No. If **NO**, skip 23 and go to Q30

23. Who in this household is involved in harvesting the products in table 2?

1. Mother
2. Father
3. Son
4. Daughter
5. Grand child
6. Non relatives

24. For how long have the different members of the household been harvesting the baobab products recorded in table 2?

1. Less than 5 years
2. 6-10 years
3. 11-20 years
4. 21-30 years
5. Over 30 years.

Table 2

Tree part	*Does anyone harvest?*	*Who is involved?*	*For how long have they been harvesting?*
Fibre			
Fruits			
Leaves			
Tubers (*zvitsupu*)			
Roots			

For products used by household in table 2, answer questions 25 to 29 in table 3:

Table 3 Do one product at a time

25. How often do you harvest the baobab product mentioned (Table 3, column 2)

1. All year, round
2. During dry season-(*Chirimo*),
3. Occasionally
4. Never

	25	**26**	**27**	**28**	**29**
	Frequency of using resource	How easy or hard	Better, same or worse now?	Why better?	Why worse?
Fibre					
Fruits					
Leaves					
Tubers					
Roots					

26. How easy is it for your household to obtain this resource (Table 3, column 3)

1 Easy
2 Fairly easy
3 Hard
4 Very hard
5 Don't know

27. Compared to about 10 years ago is it easier, the same or more difficult to obtain (Table 3, column 4)

1 Easier
2 Same
3 More difficult
4 Didn't use the product then / Didn't make the product then
5 Don't know

FOR THOSE PRODUCTS RATED AS "EASIER"

28. Why is it easier now to obtain this resource (Table 3, column 5)

1 Have more connections with those who regulate
2 Have more /better labour
3 Now harvest from my own yard
4 Go to other areas where rules are less strict
5 The product is being sold by people from outside
6 Don't know
7 Other (describe)

FOR THOSE PRODUCTS RATED AS "MORE DIFFICULT"

29. Why is it more difficult now to obtain (Table 3, column 6)

1 Fewer trees
2 Have transport difficulties
3 Have labour difficulties
4 More people living now than before
5 People taking the product to sell outside the area
6 There are stricter rules restricting harvesting
7 Trees are producing less than before (for fruits and fibre)
8 Other (specify)
9 Don't know

30. What do you use the resources in tables 2 and 3? for? (1=Yes, 2=No)

1. Fruit for own use	
2. Fruit for sale	
3. Fibre for sale	
4. Fibre for own use	
5. Fibre for commercial use e.g. make mats	

31. Where do you **mainly** collect each of the products in from (Table 4, column 2)?

32. From whom do you seek permission to do so? (Table 4, column 3)

33. Do you pay money to get permission to harvest different products? (Table 4, column 4)

Table 4

Name of baobab product	*Source area list for each* *1. Own yard* *2. Other resident' yards* *3. Own crop field* *4. Other resident's crop field* *5. Grazing areas* *6. Sacred areas* *7. Bought from vendors* *8. Collected from neighbouring villages/Buhera*	*From whom do you seek permission to collect products?* *1. WEMEC* *2. Village head* *3. Ward Councillor* *4. Neighbour* *5. State (RDC/FC)* *6. Other-specify _____*	*Do you pay something to get permission* *1. Yes* *2. No*
Fruit			
Bark			
Leaves			
Tubers (zvitsupu)			
Roots			

Income from baobab products

34. Please indicate the quantity and values of baobab products and by products you harvested and sold respectively during 2011(Table 5)

Table 5

Baobab Products and by products	**Total harvested 2011**	**Own Use 2011**	**Sold 2011**	**Unit price**	**Total Income (US$)**
PRODUCTS					
Fibre (bundles)					
Fruits (20 Litre buckets)					
Leaves (bundles)					
Tubers (dozens)					

By PRODUCTS					
Pulp (20 litre buckets)					
Oil (litres)					
Mats (No.)					
Hats (No.)					
Bags (No.)					
Ice lollies (No.)					
'Coffee' from seed (tea cups)					

Expenditure

35. For what purposes do you use income earned from baobab? (rank uses: 1, most, 2 second best…)

1. Food	
2. School fees	
3. Health	
4. Clothes	
5. Agricultural inputs	
6. To build or fix houses	
7. To buy livestock (goats, cattle etc.)	
8. To buy capital equipment e.g. ploughs	
9. Other (describe)_____	

Rules and regulations for baobab

Traditional and Government rules

36. Answer the questions in table 7 on traditional rules for the baobab products that the respondent uses (Table 7)

Table 7

Baobab Product	*Are you aware of any traditional rules in place that outline how people should use products?* 1.Yes 2.No 3.Don't know	*Do you think these rules are fair?* 1.Yes, always 2.Yes, sometimes 3. No 4.Dont know	*Do local people keep to (comply with) these rules?* 1.Yes always 2.Yes, sometimes 3. No 4. Don't know
Fibre for own use			
Fibre for commercial use			
Fruit for own use			
Fruit for commercial use			
Leaves			
Tubers			
Non consumptive use e.g. rituals/burial sites			

37. Have the traditional rules changed over time (table 8, column 2)?

1. Yes
2. No
3. Don't know

38. How have they changed? (table 8, column 3)

1. Has been relaxed
2. Become stricter
3. Has been replaced by Government rules / have replaced traditional rules
4. Has been replaced by rules formulated by NGOs working in the area
5. Has been weakened by commercial use of baobab products
6. Other, specify:……..

39. When did the different rule change? (Table 8, column 4)

40. For the **traditional rules** you think have changed, what do you think the main reasons for this have been?

1._____

2._____

3._____

Table 8

Traditional rule	Has it changed? 1. Yes 2. No	How has it changed?	When did it change? 1. Last 10 years ago 2. 11-20 years ago 3. 20-30 year 4. Over 30 years

41. Answer the questions in table 9 on **government rules** for the products that the respondent uses

Table 9

Baobab Product	*Are you aware of any government rules in place that outline how people should use products?* 1.Yes 2.No 3.Don't know	*Do you think these rules are fair?* 1.Yes, always 2.Yes, sometimes 3. No 4.Dont know	*Do local people keep to (comply with) these rules?* 1.Yes always 2.Yes, sometimes 3. No 4. Don't know
Fibre for own use			
Fibre for commercial use			
Fruit for own use			
Fruit for commercial use			
Leaves			
Tubers			
Non consumptive use e.g. burial site			

42. Have the government rules changed over time (table 8, column 2)?

Government rule	Has it changed? 1. Yes 2. No	How has it changed[2]? (see footnote 2)	When did it change? 1. 10 years ago 2. 11-20 years ago 3. 20-30 year 4. Over 30 years

43. If you think the **government rules** have changed, what do you think the main reasons for this?

1. _____
2. _____
3. _____
4. _____

Monitoring, Enforcement and compliance

1. Has been relaxed
2. Become stricter
3. Has been replaced by Government rules / have replaced traditional rules
4. Has been replaced by rules formulated by NGOs working in the area
5. Has been weakened by commercial use of baobab products
6. Other, specify:……..

44. Who **mainly** sets the rules for baobab products? (Table 10, column 2) List in order of importance for each actor for Qsn 43 and 44.

1. Ward Environment Management Committee
2. Village Heads,
3. Head men,
4. Chief Ward Councillor,
5. Forestry Commission,
6. Environmental Management Agency,
7. Rural District Council,
8. Non-Governmental Organisation (NGO)
9. Individual people
10. Other, specify_____

45. Who mainly enforces the rules (Table 10, column 3)

Table 10

Baobab product	Who **mainly** sets the rules	Who **mainly** monitors and enforces the rules
EXAMPLE: FLOWERS	9, 5	8, 4
Fibre		
Fruit		
Leaves		
Tubers (zvitsupu)		
Non consumptive uses e.g. burial		

46. Are customary rules actively enforced? (Table 11)

1. No, not at all,
2. Just a little,
3. Yes, quite effectively
4. Yes, very effectively
5. Not applicable

Table 11

Customary rule	**Enforcement level**
No debarking sacred trees	
No collection of fruit from sacred trees	
Healing time before a tree is debarked	
Quantity of fruits that one can collect	
Age of tree before debarking	
Seeking permission from village heads before collection of fibre	
Taboos e.g. no burning of fruit shells	
No cutting down of baobab trees	
Other specify	
Other, specify	

48. Are statutory rules actively enforced for the following activities? (Table 12)

1. No, not at all,
2. Just a little,
3. Yes, effectively,
4. Yes, very effectively
5. Not applicable

Table 12

Statutory rules	*Enforcement level*
Seeking permission from WEMECs before collection of fibre	
Payment of an annual marketing levy	
Being a member of a baobab use club	
Healing time before a tree is re debarked	
Payment of export permit to the FC (for those who export crafts)	

Not debarking trees in state land (e.g. along highways, in parks, and at Bocha College)	
Other, specify	
Other, specify	

49. How many times have you been arrested or fined by authorities for baobab transgression? (Table 13)

Table 13:

Authority who prosecuted	47. No. of times arrested **last year** 1. Nil 2. Once 3. More than once	48. No. of times arrested **10 years** ago 1. Nil 2. Once 3. More than once	49. Did you pay the fine **last year**? 1. Yes 2. No 3. "We talked" 4. Don't remember
Traditional authority			
State (WEMEC)			
State FC/EMA/RDC			
Ward councillor			

Ecological sustainability

50. Do you think there are enough young baobab trees to replace old or dead trees?
1=Yes; 2=No

51. What is the **main** problem associated with the black soot disease?
1. trees produce less fruits
2. trees produce poor quality fibre
3. trees die
4. makes the tree ugly
5. other (specify) _____

52. In your own opinion, is there a link between the prevalence of the black soot diseases and rate of debarking?
1=Yes, 2=No, 3.=Don't know.
If No or DON'T KNOW skip 54

53. If, YES, what do you think is the main cause of the disease?
1. Angry spirits of the land
2. Droughts,
3. Flies from toilets
4. Natural causes,
5. Old age

6. Don't know

54. In your own opinion, are there problems associated with bulk collection of fruits for sale or processing into pulp and oil?

1=Yes; 2 =No If NO, skip 55 ☐

55. If yes, what is the **main** problem? ☐

1. No fruits left for wild animals
2. No seeds left in the wild to geminate to make new trees
3. Food insecurity
4. Has angered the spirits of the land
5. Other, specify

56. Have you taken any initiative to conserve the baobab tree locally? 1 Yes 2 No (if no, skip to 58) ☐

57. What initiatives have you made? ☐

1. Planting more baobabs trees
2. Fencing off some baobabs
3. Switching to substitute products
4. Protecting saplings
5. Switching to other livelihood activities
6. Get baobab products such as fibre and fruit from other areas

58. What other tree resources do you use to process baobab products e.g. bark into mats (see table 14)?

59. What quantities of each of the resources did you collect last year?

60. Comparing now and 10 years ago, what is the level of availability of the resource?

(1. Same 2. More 3. Less 4. Don't know)

Table 14

Complementary tree resource	Used 1 Yes, 2 No	Quantity collected 2011	Level of availability of the resource over the last 10 years?
Munyii (Berchimia discolour) bark ('1kg[3]' sachets			
Munyii roots ('1 kg sachets'			
Musvosvoto bark ('1 kg' sachets			
Munzwa (Acacia spp) bark ('1kg' sachets)			
(Munzwa) Acacia pods (bundles)			
(Marasha) Charcoal (gallons)			
(Chikwenga)-Sisal (bundles)			
Mutsaa (Sanserviari spp) (bundles)			
Other, specify			

61. Do you have any comments regarding use and management of baobab products?.....

Thank you!

[3] To weigh each of the units used here e.g. bundles of sisal or '1kg' sachet of bark and also measure the area harvested to produce each of these units.